RE-IMAGINING GREEN BUSINESSES

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Editors

Prof. (Dr.) Amarjeet Kaur Malhotra
Prof. (Dr.) Sanjay Kumar
Dr. Jiangxia (Renee) Liu
Dr. Tabassum Ahmed

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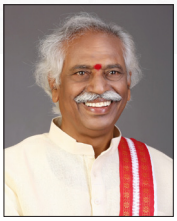
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Bandaru Dattatraya
Governor, Haryana

सत्यमेव जयते

बंडारू दत्तात्रेय
राज्यपाल, हरियाणा



Message

From the Governor, Government of Haryana

I am extremely pleased to learn that Department of Management, Gurugram University, Gurugram, is organizing 3rd International Conference on 'Re-Imagining Businesses: Leveraging Technology and Green Practices' (IC-MGMT- 2023) during 17–18 August, 2023 in collaboration with Valparaiso University, Indiana, USA.

It is indeed commendable that both the universities have joined hands to come up with an international platform for communion of thought and ideas through IC-MGMT-2023. Such types of programmes certainly help in promoting national integration at all levels.

It is indeed creditable that the Gurugram University, a very young university, is progressing as a premier Intuitions in NCR and is now organizing a joint international conference under the guidance of its worthy vice chancellor.

The theme of the conference is very relevant to current business scenarios and is also in sync with the vision of Prime Minister Shri Narendra Modi towards 'Net Zero by 2050.' Embracing technological advancements not only allows companies to stay competitive in their respective industries but also paves the way for new opportunities and disruptive ideas.

The integration of business and technology has become a driving force, propelling organizations towards a future of endless possibilities and sustainable growth. As technology continues to advance, those businesses that embrace and adapt to its potential will undoubtedly thrive in this dynamic and interconnected world.

I am sure this conference will work as a venue to deliberate and conclude such a relevant agenda of sustainable businesses through green practices and leveraging of technology. I further hope that these deliberations would result in a valuable addition to the existing body of knowledge.

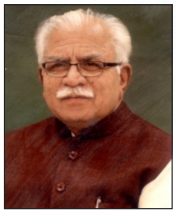
I would like to congratulate Dr Dinesh Kumar, Vice Chancellor of the University and his team for having the vision to promote research culture at the university. My heartfelt greetings to all the participants from across the world!

Best wishes!

(Bandaru Dattatraya)

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मनोहर लाल
MANOHAR LAL



मुख्य मन्त्री, हरियाणा,
चण्डीगढ़।
CHIEF MINISTER, HARYANA,
CHANDIGARH.

Dated 21-07-2023

Message

From the Chief Minister, Government of Haryana

It gives me immense pleasure to learn that the Department of Management, Gurugram University is organizing a two-day International Conference on **'Re-Imagining Businesses: Leveraging Technology & Green Practices" (IC-MGMT- 2023) during 17–18 August, 2023 in** collaboration with Valparaiso University, Indiana, USA.

It is indeed laudable that two Universities of international repute have joined hands to come up with an international conference for exchange of thought and ideas through IC-MGMT-2023. I appreciate the efforts of Gurugram University for frequently organizing research-oriented events of international repute.

The deliberations by the experts on the conference topic will provide new insights to the existing research. I am sure the conference will provide an interactive platform for the distinguished delegates from different parts of the country to share their ideas and views on a common platform.

I wish this International conference an enormous success.

(Manohar Lal)

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दुष्यंत चौटाला
DUSHYANT CHAUTALA



D.O. No. Dy. CM-2023/ 117-R

उप मुख्य मन्त्री, हरियाणा,
चण्डीगढ़।

DEPUTY CHIEF MINISTER, HARYANA,
CHANDIGARH.

Dated 03.08.2023

Message

From the Deputy Chief Minister, Government of Haryana

It is a matter of immense pleasure to know that the Department of Management, Gurugram University is organizing 3rd International Conference on "Re-Imagining Businesses: Leveraging Technology & Green Practices" (IC-MGMT- 2023) during August 17-18, 2023 in collaboration with Valparaiso University, Indiana, USA.

The theme of the conference is very relevant to current business scenarios and is also in- congruence with the vision of the Prime Minister, Sh. Narendra Modi towards adopting environment friendly green practices and national schemes like 'National Green Corps 'Ecoclub' and 'Green skills' etc.

I hope this conference will work as a platform to deliberate the most relevant agenda of sustainable businesses through green practices and leveraging of technology. It is highly commendable that two Universities of international repute have joined hands to come up with an international conference for exchange of thought and ideas through IC-MGMT-2023

The Deliberations by the experts on the conference topic will provide new insights to the existing research. I am sure the conference will provide an interactive platform for the distinguished delegates from different parts of the country to share their ideas and views on a common platform.

I wish the conference enormous success.

Dushyant Chautala

मूल चन्द शर्मा

Mool Chand Sharma



D.O.No. TM/Do/389

परिवहन, खान एवं भू-विज्ञान, निर्वाचन एवं उच्चतर शिक्षा मंत्री, हरियाणा ।

Transport, Mines & Geology, Elections and Higher Education Minister, Haryana

Dated. Chandigarh 21/7/2023

Message

From the Higher Education Minister, Government of Haryana

I am very excited and happy to note that the Department of Management, Gurugram University is organizing a two day International Conference on **'Re-Imagining Businesses: Leveraging Technology & Green Practices" (IC- MGMT-2023) during 17-18 August, 2023** in collaboration with Valparaiso University, Indiana, USA.

It is indeed noteworthy to put on record that this is the 3rd International Conference, which the Department of Management is jointly organising in collaboration with very old and established university of United States of America. Such types of research activities certainly help in promoting collaborations with overseas partners.

I would like to congratulate Dr. Dinesh Kumar, the Vice Chancellor of the Gurugram University for his relentless efforts in ensuring the overall growth of the University and promoting research culture and international collaborations.

Congratulations to the dean of the management department and to the whole organizing team.

I wish a great success to this international conference!

21/7/2023

(Mool Chand Sharma)

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अध्यक्ष

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Message

From the Chairman, National Education Technology Forum

I am glad to know that the Department of Management, Gurugram University, Gurugram is organizing a two-day International Conference on **"Re-Imagining Businesses: Leveraging Technology & Green Practices" (IC-MGMT-2023)** during 17-18 August, 2023 in collaboration with Valparaiso University, Indiana, USA, and the fact that this is the third edition of this annual event is even more commendable.

In the present scenario, it is of utmost importance for the businesses to pay attention to the utilization of green practices for the betterment of society. The topic of this conference is absolutely befitting the needs and challenges of the current stage of development that the world is at.

My heartiest congratulations to Dr. Dinesh Kumar, the Vice Chancellor of the Gurugram University for organizing such a prestigious event of international repute. Events like these foster international collaboration and offer world class exposure, making the world a truly global village, on lines of the country's vision 'वसुधैव कुटुम्बकम्'.

My best wishes to Dr. Amarjeet Kaur, Dean, Department of Management and the organizing team.

Wish you all the success!

(Prof. Anil D. Sahasrabudhe)

डॉ. (श्रीमती) पंकज मित्तल
(पूर्व कुलपति, बीपीएस महिला विश्वविद्यालय, हरियाणा)
महासचिव

Dr. (Mrs.) Pankaj Mittal
(Former Vice Chancellor, BPS Women University, Haryana)
Secretary General

भारतीय विश्वविद्यालय संघ
Association of Indian Universities



Message

From the Secretary, Association of Indian Universities

I am pleased to know that the Department of Management, Gurugram University is organizing a two-day International Conference on ***"Re-Imagining Businesses: Leveraging Technology & Green Practices"*** **(IC-MGMT- 2023) during 17–18 August, 2023** in collaboration with Valparaiso University, Indiana, USA. It is indeed commendable that both Universities have joined hands to come up with a common platform for communion of thought and ideas through IC-MGMT-2023. Such types of programmes certainly help in promoting national integration at all levels.

The theme of the conference is very contemporary and I am sure this conference will work as an opportunity to deliberate on a current topic like leveraging Green practices and Technology resulting into practical solutions for sustainable businesses.

My most heartfelt greetings to the participants coming from across the world.

Wishing a grand success to this academic endeavor of international repute!

(Pankaj Mittal)

Date: 24th July, 2023

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Prof. Dinesh Kumar PhD. (cantab)
Vice-Chancellor



Message

From the Conference Patron, Vice-Chancellor

I am delighted to note that the Department of Management, Gurugram University (GU) is organizing third International Conference on 'Re-Imagining Businesses: Leveraging Technology & Green Practices" during 17–18 August, 2023 (IC-MGMT-2023) in collaboration with the Valparaiso University, Indiana, USA.

The need for adoption of Green Practices in business world was never felt as much before as is today due to severe environmental threats. Businesses need to re-imagine their operations, re-align their objectives, re-frame their strategies, and re-invent their models towards sustainability by leveraging green practices and technology: the agenda for these two days international conference. This agenda is in congruence with the vision of the government of India, especially Prime Minister, Narender Modi Ji.

I am indeed extremely happy to learn that luminaries in the field drawn from various centers of excellence who have made noticeable contributions would be deliberating on the theme of the conference, which would certainly help participants in upgrading their knowledge and research in this direction.

I expect that this conference will provide a platform to deliberate most serious agenda of sustainability through green practices and leveraging of technology. I further hope that these deliberations would result in a valuable addition to practical solutions.

I am grateful to the Valparaiso University for having collaborating with us consecutively in second year to organize this international conference and putting our MOU in to action.

On this academic occasion of this International Conference, I congratulate the Dean, Dr. Amarjeet Kaur for sustaining the practice of organizing annual International conference and also for keeping her team motivated to organize events of great significance.

May God shower his choicest blessings upon the organizing team and the said conference has great success!

Prof. (Dr.) Dinesh Kumar
Vice Chancellor, Gurugram University, India

Department of Management
GURUGRAM UNIVERSITY GURUGRAM (HARYANA)
(A State Govt. University Established under Haryana Act 17 of 2017)



Message

From the Chairperson & Dean-FCM

It is a matter of profound privilege and pleasure to welcome you to the third International Conference on 'Re-Imagining Businesses: Leveraging Technology & Green Practices" during 17–18 August, 2023 (IC-MGMT-2023), a collaborative effort by the team at the Department of Management, Gururgram University, Gurugram, India and Valparaiso University, Indiana, USA.

Recent developments in the global economy and possible threats to environment have propelled firms to review and consider the importance of green practices and technology towards sustainable growth. Sustainable business practices balance the desire to reduce impact on the environment while remaining profitable. Adoption of technology with Innovative Change Management and Green Practices certainly can accelerate the growth of a firm on one hand and can make this world a better place to live on the other. This conference represents a broad theme which encompasses various sub-themes of contemporary interest to a business. Gurugram University seeks to provide a platform to deliberate on these global issues through this conference.

This International Conference brings together the stakeholders both from academia and industry to this platform for discussions on re-imagining businesses: leveraging technology and green practices. I am sure that after the deliberations amongst various stakeholders there would be some practical, concrete and workable solutions towards sustainable business models.

I am very grateful to Prof. (Dr.) Dinesh Kumar, Vice Chancellor, Gurugram University for his continuous support and motivation to organize such a prestigious event of international importance. I would also like to extend many thanks to the sponsors of this event for their generous support.

Finally, I would express my heartfelt thanks and appreciation to the conference organizing team for their untiring efforts to ensure success to the conference. However, if there is any disappointment to any of the participant, I shall solely be held responsible and credit of the success goes to the Team-Department of Management.

Once again, a warm welcome to one and all!

20/07/2023

Prof. (Dr.) Amarjeet Kaur
Dean, Faculty of Commerce & Management
Conference-Chair (IC-MGMT-2023)

VALPARAISO UNIVERSITY
BUSINESS

Message

From the Conference Chairperson

Professors, researchers, students, and guests—Welcome!



Thank you for joining this incredible opportunity to learn and share from some of the best academic and industry superstars. I extend my sincerest gratitude to the organizing team for working tirelessly to make this event possible for all of us to enjoy.

I am delighted that Valparaiso University (Valpo) is partnering with Gurugram University to co-sponsor an international conference on "Re-Imagining Businesses: Leveraging Technology & Green Practices" from August 17–18, 2023, at Gurugram University.

The conference agenda offers cutting-edge research and panel discussions on issues of utmost importance. Covid-19, fast-paced developments in AI, and the state of the planet implore researchers to work through challenges and leverage technological breakthroughs that work to benefit humankind and the planet.

I would also like to take this opportunity to introduce Valparaiso University (Valpo). Valpo is an internationally ranked university located near Chicago. Valpo was founded in 1859 and is consistently recognized for high-quality teaching and ranks among the best universities in the region by the U.S. News, Forbes, and the Princeton Review.

College of Business at Valpo is among the top 5% of the colleges worldwide accredited by AACSB. COB offers a holistic learning experience to develop the whole person for life, leadership, and service. Valpo's MBA program ranks among the five best Green MBA programs by the Princeton Review.

Valpo's College of Engineering is ranked among the top 15% of undergraduate engineering colleges nationally. COE offers hands-on experiences in state-of-the-art facilities to complement theoretical instruction. It is a goal of COE to not only teach students how the world works, but how they can help to change it for the better.

Valpo's College of Arts and Sciences covers a broad range of subjects in the humanities, social sciences, and sciences. The college emphasizes the value of a liberal arts education equipping students with essential skills such as critical thinking, problem-solving, and communication that are vital to navigating the world.

All of Valpo's colleges have a near 100% placement rate.

Sincerely,
Sanjay Kumar, PhD
Associate Dean
Professor of Information and Decision Sciences
College of Business, Valparaiso University

Preface

We take this opportunity to welcome you all to the Proceedings of the third International Conference, IC-MGMT-2023, on "*Re-Imagining Businesses: Leveraging Technology & Green Practices*", being organized during 17–18 August, 2023, by the Department of Management, Gurugram University, Gurugram, India and College of Business, Valparaiso University, Indiana, USA. It is truly a matter of immense pride to us to share the proceedings of the third edition of the annual series; IC-MGMT-2023, with the authors and delegates of the conference, hoping that you find it worthy and useful.

Here, we would like to introduce the readers to both of the conference organizing universities. Gurugram University is an internationally acclaimed premier institution of higher education in India. The University aims at developing global citizens of tomorrow through research, innovation, life skills, technical skills, and ethical training. The University focuses on the education ecosystem through enshrined core values of intellectual excellence, collegiality, diversity, and integrity. The University has a dynamic academic fraternity drawn from top universities nationally and internationally. Valparaiso University or Valpo was founded in 1859 as one of the first co-education colleges in the United States, Valpo consists of five undergraduate colleges. Valpo is consistently recognized for high-quality teaching and ranks among the best universities in the region by the U.S. News. In 2020, Valpo's MBA was ranked 5th best Green MBA program by the Princeton Review. The college has a placement rate of over 98%.

This very prestigious Annual International Conference is the brainchild of the Department of Management. The Department continuously strives to develop and implement well designed professional development initiatives in order to make the students future ready in every walk of life. The department attracts a great diversity of students who have the drive, confidence, and a burning desire to advance the progress for business and society. Here, we provide a perfect platform to the students for not only academic excellence, but also for making them socially responsible citizens. Special emphasis is given to their holistic development through a healthy and collaborative learning environment.

"Re-Imagining Businesses: Leveraging Technology & Green Practices" (IC-MGMT-2023) represents a broad theme that emphasizes the significance of green practices & technology towards sustainable growth, in view of recent developments in the global economy and possible threats to the environment. Green practices inculcate such societal and technological aptitude in our behavior, which leads the world towards the path of sustainability and collaborative growth. Sustainable business practices balance the desire to reduce impact on the environment while remaining profitable. Adoption of technology with Innovative Change Management and green practices certainly can accelerate the growth of a firm on one hand and can make this world a better place to live on the other.

In our endeavor, contributions were made by more than 180 researchers, as authors or co-authors. After passing through a stringent double blind review process, finally 48 papers have been included in this edited book and 11 papers have been included in the '*Gurugram University Business Review*' Journal and 8 working papers will be only presented in the five technical sessions.

The edited book, titled "*Re-Imagining Green Businesses*" has been divided into five sections, comprehensively encompassing all the themes of the international conference. These sections are:

- Green Practices in Human Capital Management
- Technology & Green Practices in Financial World
- Transformation in Green Marketing Practices
- Entrepreneurial Innovations for Sustainable Businesses
- Sustainable Businesses: Adoption of Technology

We hope that these five sections which strongly resonate with the theme of this conference, anchoring the research and perspective of the researchers and educators can help develop a number of innovations and adoption of Green Practices in the fields of technology, environment, energy, education and humanities.

This Conference is the result of persistent efforts made by the organizing team from the Department of Management, Gurugram University, Gurugram, India and Valaparaiso, University, Indiana, USA. We are grateful to the Hon'ble Vice Chancellor and Conference Patron Prof. (Dr.) Dinesh Kumar, for being the torch bearer for this endeavour. We extend our heartfelt gratitude to Prof. (Dr.) Subhash C Kundu, Dean Academic Affairs, Gurugram University, Gurugram for his continuous guidance. We are indebted to Dr. Rajiv Kumar Singh, Registrar, Gurugram University, Gurugram for his support and encouragemnt. We are also thankful to the members of International Conference Advisory Committee for their guidance. We deeply acknowledge with humble gratitude, all the intellectual authors for their valuable contributions. We express our heartfelt gratitude to the conference secretaries, Dr. Hawa Singh and Dr. Naveen Kumar, for their extensive and appreciable team efforts. Last but not the least, our sincere thanks and appreciation goes to Mr. Lalit Kumar Jha, Development Editor, Pen to Print Publishing LLP and his team for their cooperation and interest in publishing this volume, in meeting deadlines and continued support in designing and editing the content in time

Editors
Prof. (Dr.) Amarjeet Kaur
Prof. (Dr.) Sanjay Kumar
Dr. Jiangxia (Renee) Liu
Dr. Tabassum Ahmed

Contents

Message from the Governor, Government of Haryana v
Message from the Chief Minister, Government of Haryana vi
Message from the Deputy Chief Minister, Government of Haryana vii
Message from the Higher Education Minister, Government of Haryana viii
Message from the Chairman, National Education Technology Forum ix
Message from the Secretary, Association of Indian Universities x
Message from the Conference Patron, Vice-Chancellor xi
Message from the Chairperson & Dean-FCM xii
Message from the Conference Chairperson xiii
Preface xv

SECTION 1: GREEN PRACTICES IN HUMAN CAPITAL MANAGEMENT

1. Tracing the Magnitude of Publications on "Ethical Leadership" from 1967 to 2023: A Bibliometric Analysis 3
Karambir and Priti Sharma
2. Empirical Study of Employee Attrition in IT Industry in Delhi-NCR 14
Monika Bhatia, Falak Khanna and Kaina Bindra
3. Rethinking Green Human Resource Management Practices: A Conceptual Review 21
Nancy Nagpal, Nisha and Ankur Rani
4. New Workplace Dynamics in the Post-Covid World 35
Komal Aggarwal and Tabassum Ahmed
5. Challenges and Opportunities of Work From Home: An Analytical Study 48
Sanjna
6. Moonlighting in India: New Version of Work Model 64
Vidushi Malik and Himanshu Kataria
7. Assessment of Creative Behaviour of Research Scholars: An Analytical Review 73
Shikha and Gunjan Tripathi
8. Psychology of Indian Ultra Marathon Runners 90
Rajesh Wadhwa
9. Systematic Literature Review on Adoption of HRM Practices in Selected Banks of Haryana 97
Arti Gaur and Kamal Preet Kaur
10. A Study of Quality of Work-Life and Work-Life Balance 112
Priya Punia and Geeta

11. Green Human Resource Management and Sustainability: A Systematic Literature Review 122
Ritu Yadav, Shambhu Sharan Singh and Tabassum Ahmed

SECTION 2: TECHNOLOGY & GREEN PRACTICES IN FINANCIAL WORLD

12. Analyzing the Significance of Forensic Accounting in Detecting Financial Frauds in the Indian Banking Context: A Critical Review 147
Rekha Kumari and Naveen Sirohi
13. A Bibliometric Analysis of Digital Financial Services 161
Taruna Rana, Reena Yadav, Amarjeet Kaur and Sanya Kapoor
14. Green Deposits: An Alternative to Mobilize Finance for a Sustainable Future 180
Sakshi Chindaliya, Deepak Tandon and Neelam Tandon
15. Green Finance in India: Requirement and Initiatives 189
Krishna Kumari and Ritu Yadav
16. A Comprehensive Overview of Financial Instruments for Green Finance: The Present Scenario in India 194
Kapil Soni and Sarita
17. A Comprehensive Review of Green Financial Instruments in India: Corporate Governance in this Realm 195
Kapil Soni and Niraj Gupta
18. Awareness Among Youth Regarding Green Economy in India 210
Falak Khanna and Pooja
19. Necessity of Green Economy: Role of Green Economy in Sustainable Development in India 218
Pyla Narayan Rao and Sarita
20. Global Economic Challenges 227
Meenakshi Garg
21. Critical Analysis of Literature Reviews on GST in India and Its Impact of Sustainable Development in Indian Economy 240
Bhawna Joon and Sanchit
22. A Financial Econometric Perspective of Impact of Interest Rate on Indian Stock Market Indices 248
Richa Mathur
23. Emerging Opportunities and Challenges Across the Globe: An Indian Perspective 261
Seema Mahlawat, Anshita Yadav and Mahesh
24. Review of Risk and Return in the Real Estate Market of NCR 270
Neeraj Kumar, Pawan Kumar and Naveen Kumar

SECTION 3: TRANSFORMATION IN GREEN MARKETING PRACTICES

25. Examining the Effects of Confirmation Bias on Consumer Search for Information and Use of Information Sources 279
Aden Wade, Musa Pinar, Muaad Alamoudi, Derrick Cummings and Emily Wooton

26. Green Marketing Practices: A Study on Sustainability of Recron and R/Elan Green Gold 281
B.L. Verma and Mitul Daglia

27. To Explore the Differences between Customer Behaviour and Actions in Relation to Green Products: Review of Systematic Literature, Synthesis and Future Directions 296
Monika Gahlawat

28. From Fashion to Responsibility: Unveiling Consumer Awareness Towards Sustainable Clothing 310
Seema Mahlawat, Nikita Khatana and Ritu

29. Examining the Use of Green Marketing Techniques Used by FMCG Companies 317
Falak Khanna

30. Green Marketing and Customer Retention Publication: A Bibliometric Analysis 325
Preeti Sikriwal, Ankita Yadav and Rashmi

31. Sustainable Consumption Behaviour: A Study of Delhi-NCR 336
Anshita Yadav and Anjali

32. Adoption of Sustainability Performance and Social Media Marketing for Business Growth 347
Ritu and Nisha

SECTION 4: ENTREPRENEURIAL INNOVATIONS FOR SUSTAINABLE BUSINESSES

33. Exploring the Dimensions of Corporate Social Responsibility: A Bibliometric Analysis 359
Reena Yadav, Amarjeet Kaur and Taruna Rana

34. A Descriptive Study on Machine Learning Driven Decision-Making Strategies: Alternative Data and Human Behaviour 381
Naveen Kumar, Komal Sharma and Somveer

35. A Systematic Literature Review on Socio Cultural and Economic Factors of Women Entrepreneurs 392
Sanjna

36. Role of Startup20 in Accelerating Startups in India 407
Anshita Yadav and Divya

37. Social Entrepreneurship in India: Opportunities and Challenges 416
Narita Ahuja and Neha Malhotra

38. MSME Sector in Haryana: Prospectus and Status 429
Sanjay Kumar Hooda and Santpal

39. Impact of Single Use Plastic on Tourism Resources 442
Brijesh Kumar

40 Analysis of Green Energy Sources in India 455
Joginder Singh, Narpal Yadav and Ramniwas Sangwan

SECTION 5: SUSTAINABLE BUSINESSES: ADOPTION OF TECHNOLOGY

41. Combining Active Vibration Control and Energy Harvesting 465
Daniel J. Maguire and R. Bruce DeRoo

42. Incorporating Sustainability into Existing Curriculum 469
Jiangxia (Renee) Liu

43. Green Energy: Goal 7 of Sustainable Development Goals 476
Jitendra Kumar

44. Technological Innovation in HR Processes and Green HRM Management Practices 487
Anuradha Ghosal

45. A Conceptual Framework to Understand Impact of Artificial Intelligence in Manufacturing Industry 503
Divya Dwivedi and Nidhi Verma

46. Study of Importance of IoT in Smart Cities 520
Shelly Garg and Sakshi Gupta

47. The Contribution of STEM Education in Raising Educational Standards 525
Neetu Kaur and Sonal Pathak

48. Upasana – Expediting Planet's Journey Towards a Sustainable Future 538
Mandeep Kaur, Amarjeet Kaur and Sunint Bindra

Author Index 545

Call for Papers 547

SECTION 1

GREEN PRACTICES IN HUMAN CAPITAL MANAGEMENT

Tracing the Magnitude of Publications on "Ethical Leadership" from 1967 to 2023: A Bibliometric Analysis

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Abstract

Ethical leadership has been a buzz word in today's business world, leadership with absence of ethical values have no relevance today. Ample articles have been published on the theme "ethical leadership", ergo, this study aims to trace the magnitude of publications on ethical leadership published in Scopus listed journals. Further, this article will also explore the annual scientific production, annual citation per year, most relevant sources, most local cited sources, most relevant authors, country affiliation, corresponding author's country, collaboration between the countries etc. Outcomes of this paper will be of great use to the future researchers, who are actively involved in the research on ethical leadership. Outcomes will also be of great use for doing SLR (systematic literature review).

Keywords: *Ethical Leadership, Bibliometric Analysis, Scopus, Leadership, 1967–2023.*

INTRODUCTION

An ethical leader should have all the characteristics to influence the results of the organizations, it is the leadership quality which induces the others to be committed, loyal, productive and intact with the organisation. Much have been written on ethical behaviour of the leader since 1967 to 2023. In the last 56 years (from 1967 to 2023), the growth in the publications is quite good and enriching.

The bibliometric analyses have gained attention these days, it is not helpful in tracing out the work done so far in the particular area but also provide strong base to the researcher in doing further systematic literature review.

This study aims to explore the following research questions in the field of "ethical leadership":

Q1. How the theme "ethical leadership" evolved and developed in the last 56 years?
Q2. What status it has attained in the last 56 years?
Q3. What publication and citation patterns the theme is having from 1967 to 2023?
Q4. What are the major associated sub themes explored so far?
Q6. What works of the theme has attained greatest scholarly attention?

Q7 What is the spread of the geographical distribution of the contributors in theme "ethical leadership"?

Rationale of the Study

Bibliometric analysis complemented "Systematic Literature Review" and "Meta- Analysis" by providing a sound base of the work done so far in the particular area. "Bibliometric analysis is a statistical way of analysing and evaluating the published articles, book chapters, proceedings papers books etc. to gauge the major impact of the publications on scientific league" (Surbhi and Sharma, 2022). It provides a detailed analysis of the publication trend in the context of ethical leadership and the number of sources of those production from 1967 to 2023. Further, it also provides a comprehensive explanation of the citation trend, keywords used, trend of the publications, countries scientific contribution, collaboration of different countries in publishing content on ethical leadership, corresponding author's country etc.

METHODOLOGY

- *Bibliometric Analysis:* The term Bibliometric analysis was first propounded by Otlet in the year 1934 as "the measurement of all aspects related to the publication and reading of books and documents". (Saini and Sharma, 2022) stated in their paper that "it is a quantitative method of describing, monitoring and evaluating the published research articles/ documents."
- *Data Collection:* In this study, papers published in Scopus listed journals have been collected. Data collected from the Scopus database itself using Maharshi Dayanand University, Rohtak (Haryana) subscription. Data has been collected using the term "ethical leadership" and the search gave 1380 documents from 646 sources in English language only. In this study, only published articles are included. Bibliometric analysis performed using Biblioshiny platform of R-Studio.

RESULTS AND DISCUSSION

Table 1: General Information about the Data Collected

MAIN INFORMATION ABOUT DATA	
Duration of the publications	1967:2023
Sources (Journals, Books, etc)	646
Number of Documents	1380
Annual Growth Rate %	7.68
Document Average Age	6.85
Average citations per doc	29.24
References	63836
DOCUMENT CONTENTS	
Keywords Plus (ID)	1217

Author's Keywords (DE)	2462
AUTHORS	
Authors	2708
Authors of single-authored docs	303
AUTHORS COLLABORATION	
Single-authored docs	333
Co-Authors per Doc	2.62
International co-authorships %	23.26

Source: Authors

Annual Scientific Production

In the Figure 1, scientific production of the papers/articles produced in the last 56 years i., e. from 1967 to 2023 have been presented.

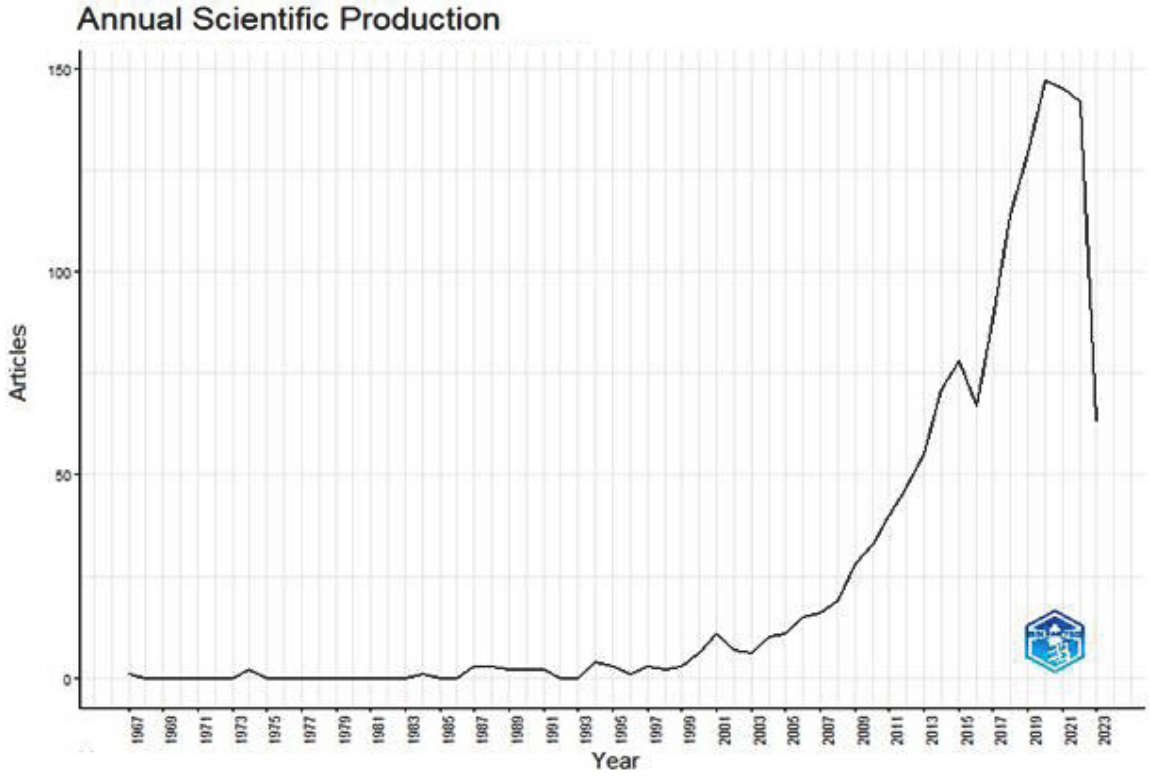


Figure 1: Annual Scientific Production
Source: Author's own compilation

I can be easily observed that, from 1967 to 2007, the trend increasing at a very constant or decreasing rate but after 2007, the production of publications have increased with increasing rate.

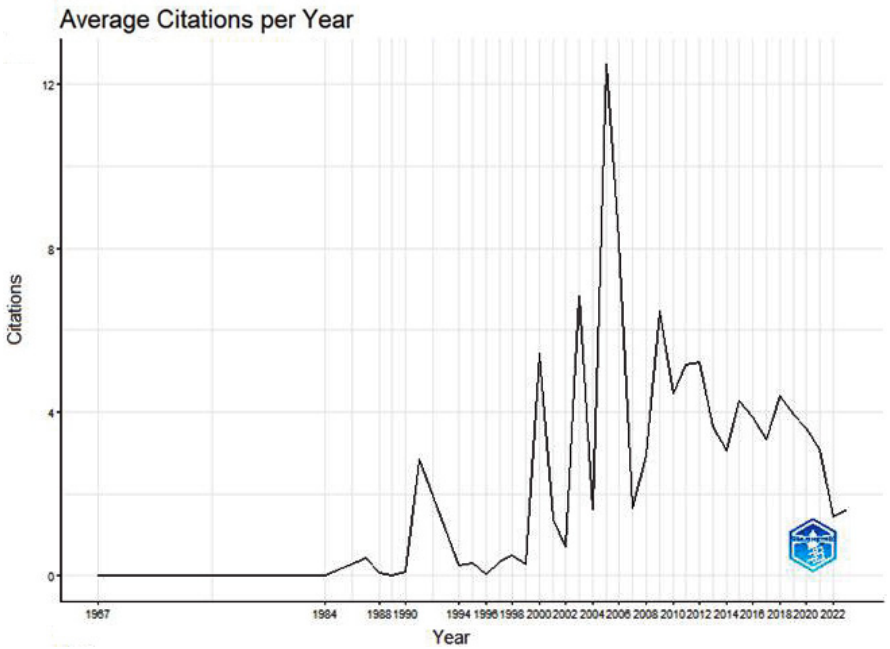


Figure 2: Average Citation Per Year
Source: Author's own compilation

Figure 2 presents the trend average citations attained/ received the theme in all sources in the last 56 years. From 1967 to 1984, it was stable but after that high volatility can be observed. Highest citation was received in the year 2006.

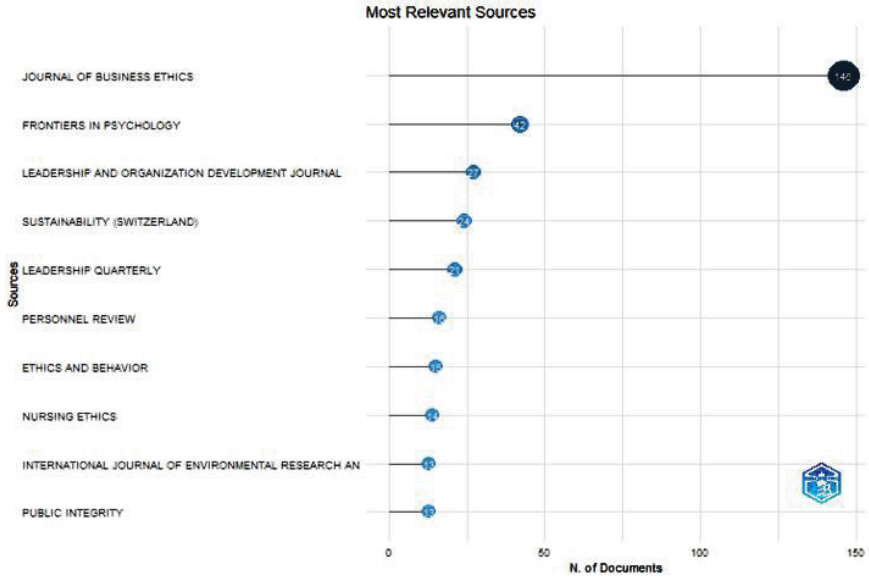


Figure 3: Most Relevant Sources
Source: Author's own compilation

The Figure 3 represents the top ten most relevant sources of the theme "ethical leadership" out of 646 sources presents in the data set, in which "Journal of business ethics" have produced highest and relevant publications in the field.

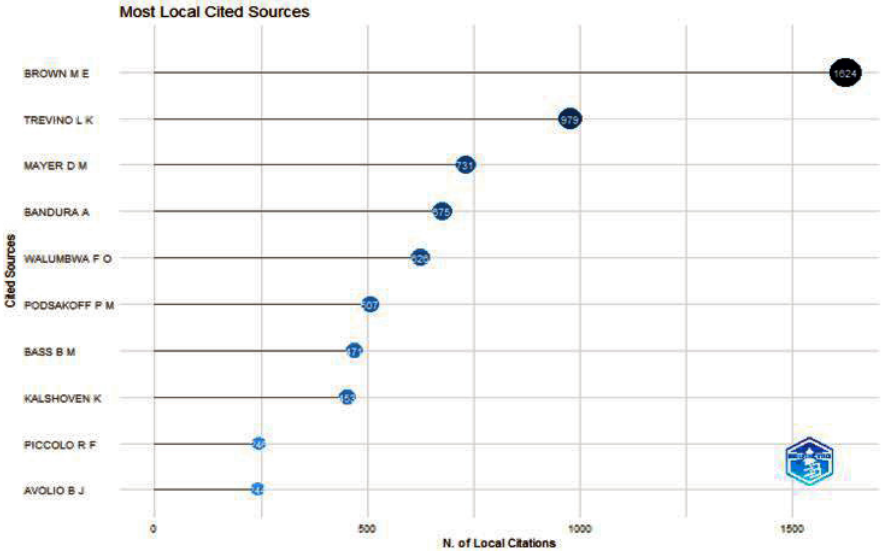


Figure 4: Most Local Cited Sources
Source: Author's own compilation

The Figure 4 presents the top ten "most local cited sources" of the theme Work of Brown, M. E. has received the highest citation in the last years, after that Trevino K.

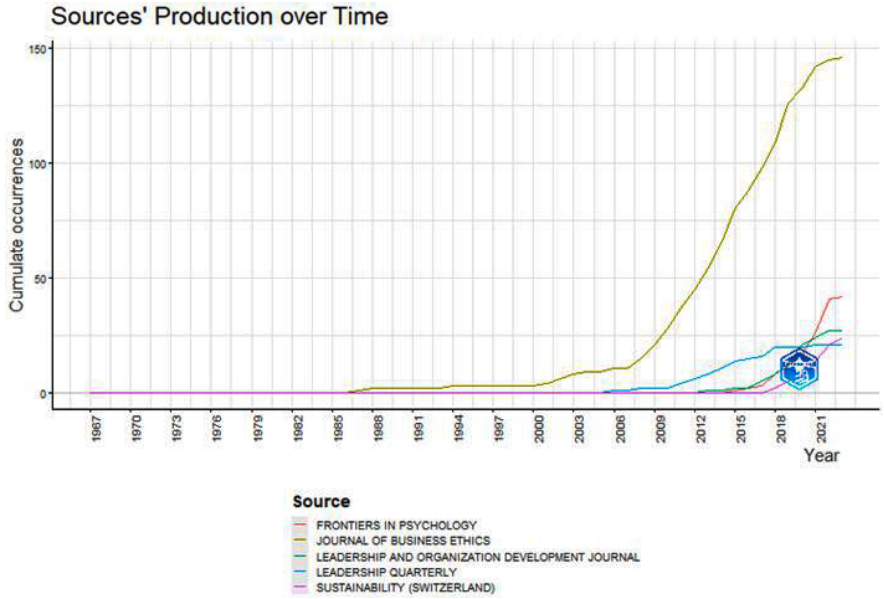


Figure 5: Production/Contribution Made by the Sources
Source: Author's own compilation

In the Figure 5, the contribution made by relevant sources have been presented. Initially, the trend of all the sources is quite stable and started gaining attention from 2003 onwards. Among all, Journal of Business Ethics is having highest production in the theme "ethical leadership".

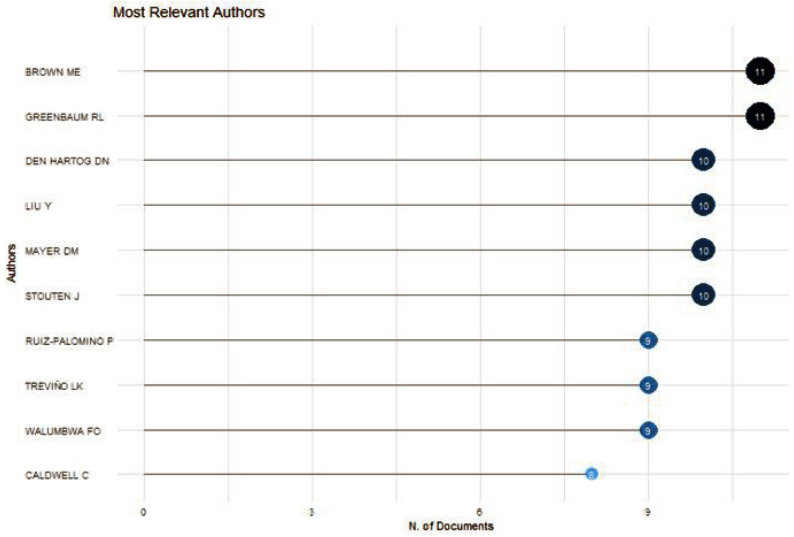


Figure 6: Most Relevant Authors
Source: Author's own compilation

Figure 6 shows the top 10 most important and relevant contributors in the field of "ethical leadership" out of total 2708 authors in the field.

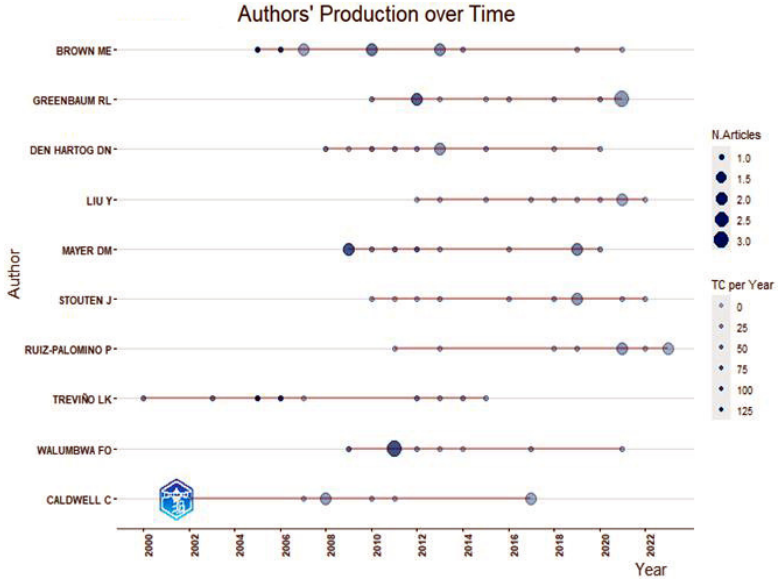


Figure 7: Authors' Production Over Time
Source: Author's own compilation

In Figure 7, the publication production of most relevant authors out of total 2708 authors in the field have been presented. The most relevant author, having maximum citation globally has started doing publications after 2004. The above also presents the total number of articles produced by the authors along with their citation score.

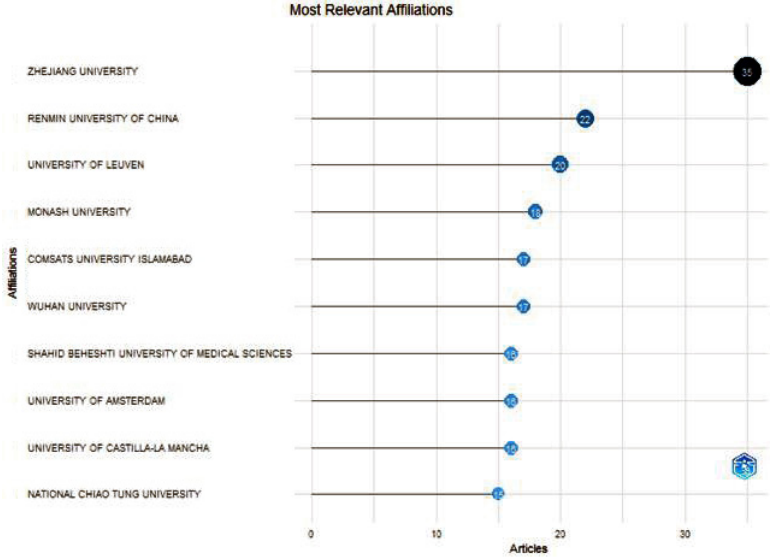


Figure 8: Most Relevant Affiliations
Source: Author's own compilation

Figure 8 represents the top ten author's affiliations out of 1176 who have contributed significantly in the field of ethical leadership. Among all, Zheiang University has the highest number of articles produced in the field.

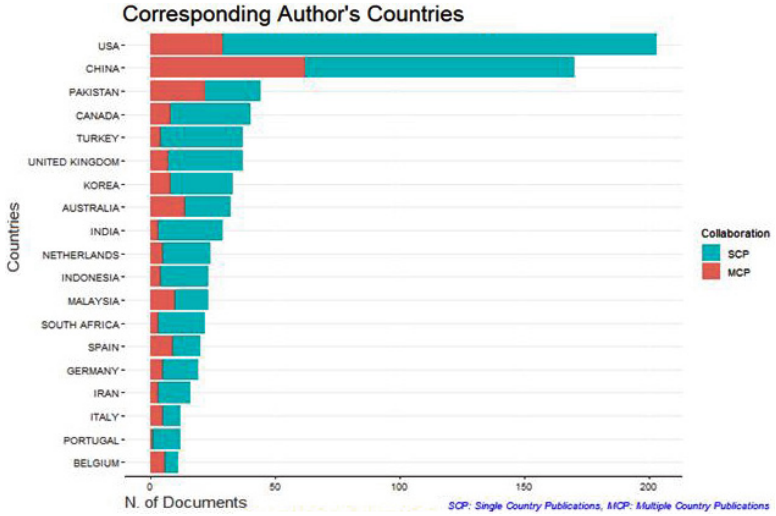


Figure 9: Corresponding Authors' Countries
Source: Author's own compilation

Figure exhibits the countries of the corresponding authors who have contributed significantly in the field of ethical leadership. In this, it is shown that USA has the highest score which is followed by China, Pakistan and Canada. India holds the 9th position in this parameter of assessment.

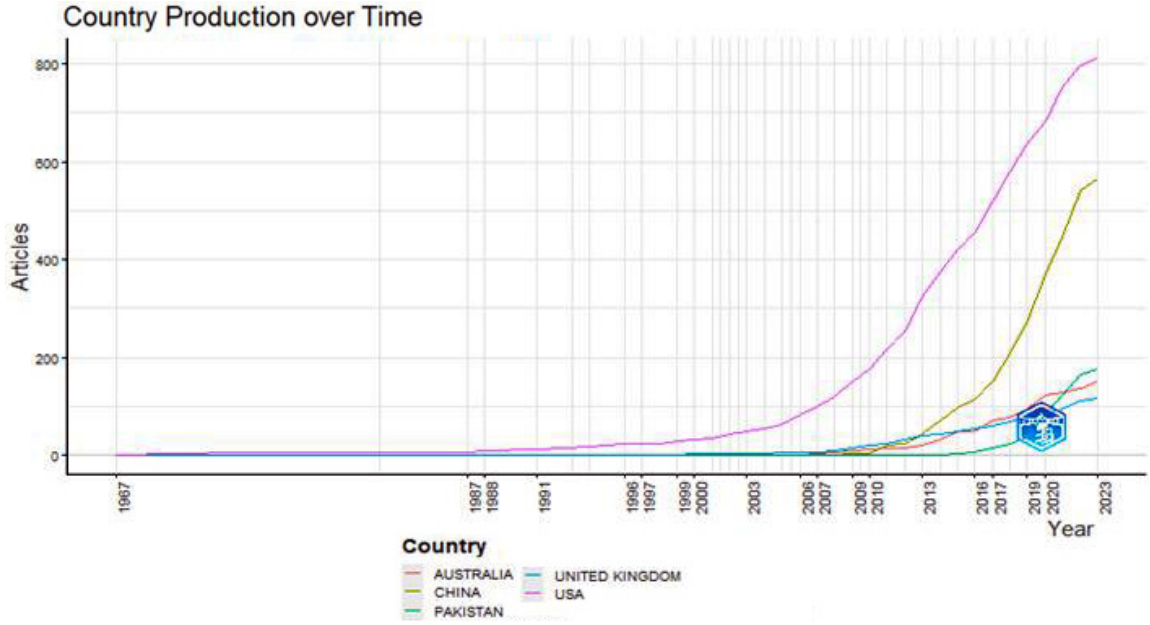


Figure 10: Country Production Over Time
Source: Author's own compilation

The above figure represents the trend of publications of top five countries on the basis of their number of publications. The above figure clearly depicts that United States of America has the highest number of publications and USA started writing in the year 1967 only with one publication thereafter it goes increasing year by year e.g. 5 in 1974, 6 in 1987, 9 in 1988, 10 in 1989, 120 in 2008, 177 in 2010, and 811 in the year 2023. And USA has maximum citation 16157, China has 4356, etc.



Figure 11: Word Cloud of Keywords Used by Authors
Source: Author's own compilation

Figure 11 represents the word cloud of the key words used in the last 56 years in the publications pertaining to ethical leadership. This shows the occurrence of a particular word in publications. The term "leadership" appears 357 times, human appears 173 times, ethics appears 123 times, article appears 113 times, female appears 85 times and male appear 82 times and so on.

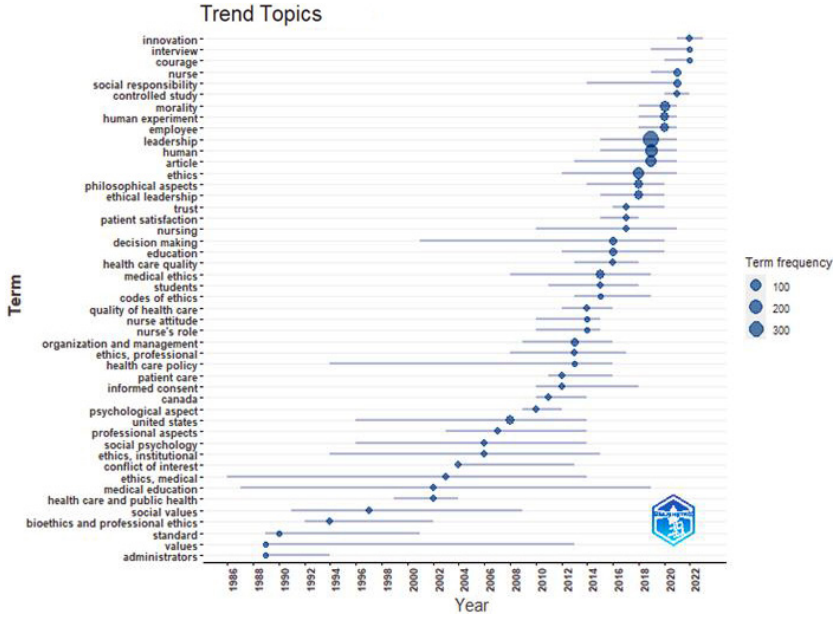


Figure 12: Occurrence of Important Topics
Source: Author's own compilation

Figure 12 shows the trending topics under ethical leadership publications, innovations , interview, courage, social responsibility, leadership, ethics etc occur in the frequency of 100s in the last 56 years between 1967 to 2023.

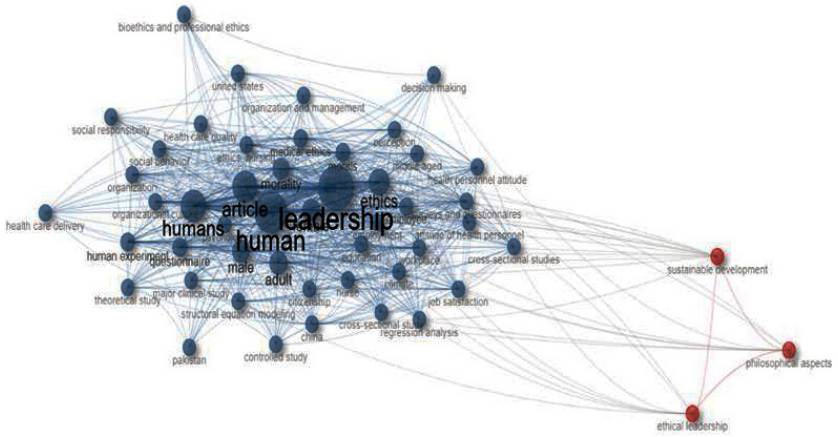


Figure 13: Co-occurrence Network of Keywords
Source: Author's own compilation

Figure 13 represents the co-occurrence network of the keywords used in the publications of ethical leadership which means together occurrence of key words. Different colors show different cluster and their relationship. Blue cluster is related to leadership, human, ethics etc. and red clusters show sustainable development, philosophical aspects, ethical leadership and their relationship with each other.

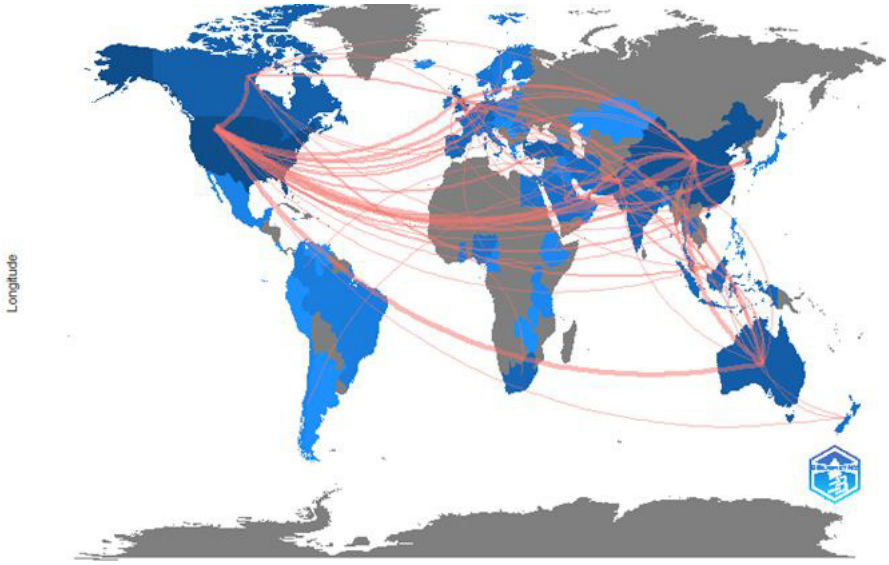


Figure 14: World's Collaboration
Source: Author's own compilation

The Figure 14 represents the collaboration between the countries for the publication under ethical leadership. Australia collaborated with Belgium, Canada, Finland, India, including 19 countries, similarly other countries have also collaboration with other countries.

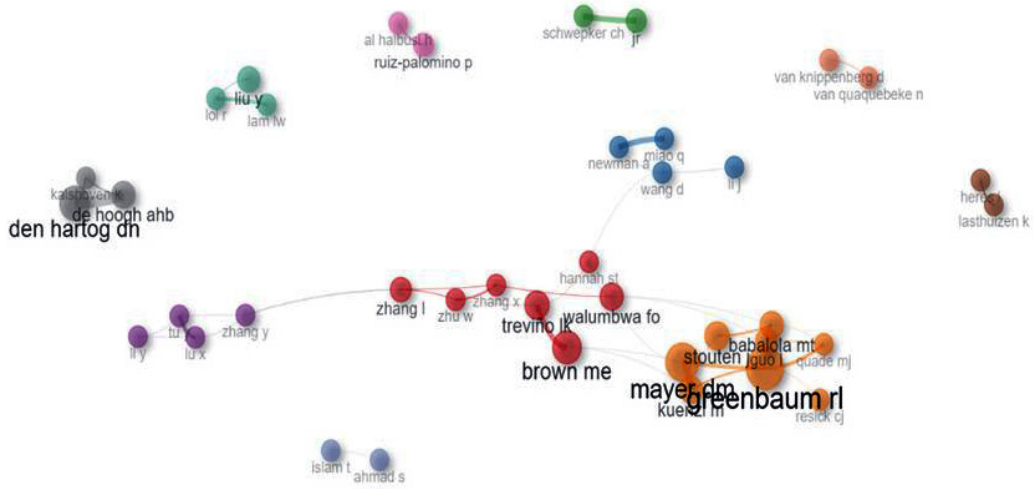


Figure 15: Authors Collaboration Network
Source: Author's own compilation

The Figure 15 shows the author's collaboration network which means which authors collaborated previously for the publication on ethical leadership.

CONCLUSION

The pattern and nature of publications pertaining to Ethical Leadership were analyzed using Bibliometric Analysis. Outcomes of the analysis depicts that publications have been increasing since after 2000 and keep on increasing. USA has a leadership in publications pertaining to ethical leadership, maximum number of publications have been published by USA then other countries, similarly USA has maximum citations with maximum affiliations. Further, the term "leadership" has the maximum frequency in the publications of the authors and Brown Me has the maximum number of publications as well as citations with most relevant publications in the field.

The findings of this study can be further utilize for performing meta-analysis and systematic literature review. The findings also provides a comprehensive overview on the most relevant author, most cited paper, most cited country etc which gives a strong base to further research and also depicts which country is having leadership in the publication concomitant to Ethical Leadership. Since, only Scopus listed journal has been included in the study, further study can be happen on web of science and other sources of publications.

REFERENCES

[1] Saini, D., and Sharma, P. (2022). Dividend Policy: A bibliometric analysis, *Finance and Banking,* Vol. 11, No. 1, pp. 15–28.

[2] Surbhi, and Sharma, P. (2022). Debt Financing and Capital Structure Influencing the firm's financial performance: A bibliometric analysis, *Orissa Journal of Commerce,* Vol. 43, No. 2, pp. 105–125.

Empirical Study of Employee Attrition in IT Industry in Delhi-NCR

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Abstract

This empirical study delves into the issue of employee attrition within the Information Technology (IT) industry in the Delhi-NCR region. The rapid growth of the IT sector in this geographic area has led to a significant increase in job opportunities, but it has also resulted in higher turnover rates among employees. The research aims to identify the primary drivers of attrition and understand their impact on IT companies operating in Delhi-NCR.

Keywords: *?*

INTRODUCTION

Moderate employee attrition can be advantageous for any organization as it welcomes fresh perspectives and innovative ideas. This helps the organization stay agile in rapidly changing environments, while also introducing new talent to foster growth, development, and improvement. Furthermore, it paves the way for expanding operations and promoting creativity within the organization. In this context, limited attrition can lead to gains for the organization.However, when attrition surpasses a certain threshold, the benefits turn into drawbacks. Recruiters often point out that high attrition rates lead to substantial investments in time and money for hiring new employees. Unfortunately, these investments fail to yield profitable returns when attrition remains high.

Important of Attrition

Employee attrition, to some extent, is beneficial for organizations as it brings in fresh perspectives and new ideas. This helps maintain organizational agility, especially in rapidly evolving environments. Additionally, it allows for the infusion of new talent, encouraging progress, development, and innovation, while also exploring opportunities to expand and enhance the organization's creative endeavors. In moderation, attrition can yield gains for the organization. However, it is crucial to note that when attrition exceeds a certain level, it becomes detrimental. Recruiters emphasize that high attrition rates result in significant investments of time and money to acquire new employees. Unfortunately, these investments do not translate into profitable returns when attrition remains excessive.

OBJECTIVE OF THE STUDY

The purpose of this report is twofold:

1. To investigate the reasons behind attrition.
2. To assess the influence of age, sex, marital status, experience, and native place on attrition.

SCOPE OF STUDY

- Employees participated in interviews and completed questionnaires containing structured questions about various factors contributing to employee attrition.
- This study specifically focuses on employee attrition.
- The findings of this study can assist organizations in identifying areas where employees feel dissatisfied with the organization.
- This research has broader applicability across different types of organizations, as "attrition" is a general issue that prompts employees to express their practical difficulties and needs within the organization.
- The study helps management understand the reasons behind employees changing jobs due to dissatisfaction with organizational factors and provides optimal suggestions or solutions for improvement.

REVIEW OF LITERATURE

According to AMARAM et al. (2005), the key lies not merely in reducing attrition rates through various retention strategies, but rather in identifying the right candidates during the recruitment process. When organizations hire individuals who identify with the company's values and culture, they are more likely to stay and become valuable assets to the company. Cultural shock can cause employees to withdraw and experience unnecessary pressure. Hence, organizations must strike a balance between supporting their employees and maximizing their productivity. When either approach is taken to an extreme, it can result in dissatisfaction and, ultimately, attrition.

In a study conducted by Park et al. (2013), it was found that employees are more motivated to excel in their jobs when they have ownership of their work. This means granting them sufficient freedom and authority to carry out their tasks, instilling a sense of ownership in the results. As employees gain experience and maturity in their roles, organizations should offer opportunities for increased responsibility.

Regarding supervision, Booyens et al. (2013) emphasize its role in evaluating the organization's effectiveness both vertically and horizontally, ensuring appropriate resource utilization, error rectification, maintaining standards, and achieving objectives. According to Falkenburg and Schyns, supervisors also act as a source of social support for employees.

Booyens (2013) describes orientation as personalized training for new employees to familiarize them with the job requirements. Effective orientation helps new employees showcase productive work performance and reduces anxiety while fostering a positive attitude towards the employer.

Nel et al. (2013) and Habeck, Kroger, and Tram (2013) discuss the psychological contract between employers and employees, reflecting the mutual expectations in the employment relationship. Work content is highlighted as a key factor contributing to attrition, where quantitative overload can lead to stress-related health issues and staff turnover.

Ichniowski et al. (2013) emphasize the importance of social contacts in working conditions, where supportive interactions among colleagues, managers, and subordinates act as a buffer against stress and positively impact health. On the other hand, unhealthy social relationships in the workplace can lead to absenteeism and staff turnover.

Kevin et al. (2014) note that while there is no standard framework to understand employee turnover, various factors can predict it. Henry Ongori (2014) suggests that management can reduce turnover by promoting job redesign, task autonomy, empowerment of employees, and scientific recruitment and selection. Hamermesh (2014) emphasizes the need for a comprehensive understanding of staff turnover before making personnel decisions, as incorrect promotions or firings can lead to productivity loss and decreased employee loyalty.

In conclusion, the above studies shed light on the causes of employee attrition, highlighting the significance of factors like work content, social relationships, and management practices. Selecting the right candidates during recruitment, providing adequate support, and encouraging a sense of ownership can aid in employee retention and organizational success.

LIMITATION

- The researcher's sample includes only 140 observations. To enhance the generalizability of the findings, further confirmation through a larger sample is needed.
- It's important to note that this study exclusively focuses on a specific type of company (private limited company). As a result, the results may not be applicable to all sectors.
- The size of the organization was not factored into the study, which could potentially influence the outcomes and should be considered in future research.

Sample Size

The study's scope encompassed employees and HR managers from various companies, with a total of 140 respondents in this category.

Statistical Tools Used in the Study

The analysis and interpretation of the collected data involved the utilization of several statistical tools, including the Chi-square test, Karl Pearson Rank correlation, and the percentage method.

Chi-Square test (χ^2): The degrees of influence of several independent variables on attrition among the respondents were examined. To identify the factors of television ads influencing the respondents, the researchers employed the Chi-square ($\chi 2$) test with the following formula:

$$\chi^2 = \frac{\Sigma (O - E)^2}{E}$$

The degree of freedom (DF) was determined using the formula: DF = (c – 1) × (r – 1), where: O represents the observed frequency of the variables.

E = Expected frequency, c = Number of columns, r = Number of rows.

HYPOTHESES OF THE STUDY

H_{01}: Age and causes of attrition do not exhibit a significant difference.
H_{02}: Gender and causes of attrition do not exhibit a significant difference.
H_{03}: Martial Status and causes of attrition do not exhibit a significant difference.
H_{04}: Native place and causes of attrition do not exhibit a significant difference.
H_{05}: Experience and causes of attrition do not exhibit a significant difference.

ANALYSIS

One Way

Table 1: Age, Gender, Martial Status, Native Place, Experience and Impact on Attrition

	No. of Respondents	*Percentage*	*Average*	*Range*	
				Min	*Max*
Age					
20-25	45	32.15	42	29	57
26-30	56	40	44	27	55
31 & above	39	27.85	45	30	55
Total	140	100			
Gender					
Male	80	57.15	39.62	29	55
Female	60	42.85	43.94	30	57
Total	140	100			
Marital Status					
Married	67	47.85	42.40	28	53
Unmarried	73	52.14	44.49	28	56
Total	140				
Native Place					
Local	67	47.85	42.40	28	56
Other	73	52.14	44.49	27	55
Total	140				
Experience (Year)					
0-1	60	42.85	44	28	56
1-2	50	35.71	45	29	55
3 & above	30	21.42	45	28	55
Total	140				

Chi-Square (χ^2) Test

Table 2: Age, Gender, Martial Status, Native Place, Experience and Impact on Attrition

Factor	*Calculated χ^2 Value*	*Table Value*	*Degree of Freedom Remarks*	*Remarks*
Age	9.47	7.78	4	Significant (at 1% level)
Gender	5.02	4.61	2	
Marital Status	6.03	4.61	2	
Native Place	0.19	4.61	2	
Experience	5	7.78	4	

Cumulative Results (Chi-Square Analysis)

Table 3

Factor	*Results*
Age	Hence H_0 is rejected; there is difference between age and causes of attrition.
Gender	Hence H_0 is rejected; there is difference between gender and causes of attrition
Marital Status	Hence H_0 is rejected; there is difference between marital status and causes of attrition
Native Place	Hence H_0 is accepted; there is no significant difference between native place and causes of attrition.
Experience	Hence H_0 is accepted; there is no significant difference between experience and causes of attrition.

SUGGESTIONS

Here are some suggestions to reduce employee attrition in the organization:

1. Clearly communicate goals and expectations to employees.
2. Foster cooperation and collaboration among employees.
3. Offer competitive salary packages.
4. Recognize and utilize the potentials of employees by guiding them in the right direction, appreciating their work, and addressing their faults constructively.
5. Create a healthy and supportive work environment to ensure sustainable growth for all.
6. Minimize stress on employees by managing workloads effectively.
7. Address issues that contribute to attrition, such as lack of career growth, unsatisfactory remuneration, and inadequate working conditions. Consider offering promotions, better remuneration, and improved working conditions to mitigate attrition.
8. Ensure timely salary payments and fix a regular payment schedule.
9. Consider increasing salary to boost employee morale and job satisfaction, allowing them to meet their needs and feel more content.
10. Show appreciation for employees' efforts and support work-life balance.
11. Provide proper compensation and benefits to employees.
12. Offer monetary incentives and rewards for exceptional performance.

13. Cultivate a competitive work culture, maintain good behavior from management, provide training opportunities, and address concerns like timely salary and overtime pay.
14. Conduct fair and meaningful yearly appraisals with deserving candidates receiving promotions. Continuously improve working conditions by seeking employee feedback.
15. Ensure timely payment of salaries to retain employee satisfaction.
16. Maintain a healthy work environment by minimizing excessive pressure and stress.
17. Enhance employee benefits to improve job satisfaction.
18. Provide necessary training and working knowledge to all employees.
19. Offer timely bonuses as additional incentives.
20. Foster good relationships between management and employees to promote loyalty and retention.

CONCLUSION

The primary human resources challenge faced by companies today is attrition, particularly prevalent in the IT/ITES industry. The study reveals several key findings related to this issue. Generally, there are four main reasons for attrition in organizations: Business-related factors, System-related factors, Supervisor-related factors, and Individual personal-related factors. Among the various industries, the voice-based processing sector experiences the highest percentage of attrition. The main contributors to attrition are career growth opportunities, compensation, and supervision. Employees often seek job changes due to the monotonous nature of their current roles, resulting in an average job tenure of around two years. The conditions of attrition may differ between small and large companies. Employee, employer, and supervisor all play a role in influencing turnover, with many employees considering another job within 1-3 years. Attrition leads to significant costs for companies, including expenses related to training, recruitment, new hires, lost productivity, and personal leave. The economic status of organizations plays a crucial role in controlling attrition rates. Companies universally recognize the value of conducting exit interviews as an effective means to manage and reduce attrition. Marketing departments often emphasize the importance of customer relationship management (CRM). However, it is essential to recognize that employees are the organization's first customers, and their needs should be understood and met. Adopting an Employee Relationship Management (ERM) approach is crucial for retaining employees. Consistently fulfilling reasonable employee expectations should be an ongoing process for companies.

REFERENCES

[1] Anil Varma (2008), Attrition in IT and IT Enabled services sector – Concepts and cases.

[2] Anil Varma (2008), Challenges of Attrition and Retention Strategies.

[3] Armstrong D.J., Riemen Schneider C.K., Allen M.W. and Reid M.F. (2007), "Advancement, Voluntary Turn-Over and Women in IT: A Cognitive Study of Work-Family Conflict", *Information & Management*, Vol. 44, No. 2, pp. 142–153.

[4] Boyne, G., Jenkins, G., and Poole, M. (1999), "Human Resource Management in the Public and Private Sectors: An Empirical Comparison". *Public Administration*, 77, 2, 407–420

[5] Carter Malkation (2007), A History of Modern Wars of Attrition, Praegar Publishing.

[6] Chand, M. and. Katou, A. (2007), "The impact of HRM practices on organizational performance in the Indian hotel industry", *Employee Relations*, Vol. 29, Issue: 6, 576–594.

[7] Chikita Kukareja (June 2007), "IT Kills", *Management Education Magazine*, Vol 2, Issue 6, 23–26.

[8] Chiu, R.K., Luk, V.W.M. and Tang, T.L. (2002), "Retaining and Motivating Employees: Compensation Preferences in Hong Kong and China", *Personnel Review*, 31, 402–31.

[9] Dwivedi. R.S. (2008), "Management of Human Resource", New Delhi, Oxford & IBH.

[10] Jasmin Knnetarevic and Stephane Mechoulan (2006), "Birth order educational achievements and earnings", *The Journal of Human Resources*, Vol 41, No. 4.

[11] Jim Wannamaker (2008), Attrition & Alen Shope (2009), My Attrition.

[12] Johnny C. Taylor, Gary M. Stern. Publisher: American Management Association. Place of publication: New York. Publication year: 2009. Page number: i.

[13] K. Mallkarjunan (2008), "Employee Attrition: An Overview of the causes andremedies", *HRM Review*, March 2008 Issue, 39–42, ICFAI University Press, Hyderabad.

[14] Kakoli Sen (July 2008), "Relationship between Job Satisfaction and Job Stress among Teachers and Managers", *Indian Journal of Industrial Relations*, Vol 44, No. 1.

[15] Kalyan Shankarray, Phalgu Niranjana and Biswajeet Pattanayak (April 2009). "Creating Performance organization through Optimistic Culture", *IMIdisha Journal*, Vol 2, No. 1.

[16] Keith J. Bowers (2008), Attrition: The Wars of Shadow.

[17] Kiran Kumar (2008), "Attrition Control", *HRM Review*, March 2008 Issue, 43–46, ICFAI University Press, Hyderabad.

[18] Leigh Branham (2005). American Management Association, New York. Page number: iii.

[19] M. Sadika Soltana and L. Manivanan (March 2009), "Knowledge Management in Pharmaceutical Marketing – Theoretical Models", *The ICFAI University Journal of Knowledge Management*, Vol 7, No. 2.

[20] Mark Abidi (2008), "Understanding employee turnover and retention", August 29, 2008.

[21] Og Mandino, Colin Ed. Drummond (1991), The Greatest Success in the World.

[22] P. Subba Rao (Jan 1999), "Essentials of Human Resource Management and Industrial Relations", Himalaya Publishing House, Delhi.

[23] Pallari Kolte Kekre (July, Sept 2007) , "Gender equality with Gender responsive budgeting", *Vikas Vani Journal*, Vol. 1, Issue 3.

[24] R. Raman (2006), "Strategies to retain Human Capital in Business Process Outsourcing Industry", (February 2006), Kohinoor Business School, Khandala.

[25] Report by Global Consulting Company, Hay Group.

[26] Shashi K. Gupta & Rosy Joshi (2003), "Human Resource Management", Kalyani Publishers, New Delhi.

Rethinking Green Human Resource Management Practices: A Conceptual Review

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Abstract

Concerns about the state of the environment on a worldwide scale have been growing over the past several years. Because of these worries, additional pressure was applied to, and it became necessary for, businesses and industries to develop and employ green management by adopting environmentally friendly methods and products. Now, more than ever before people were willing to act in an environmentally responsible manner earlier, and they were aware that they are a part of society and should as a result implement green practices in the organizations in which they work. Green Human Resources Management, often known as Green HRM, has recently begun to garner the interest of academic scholars as well as practitioners. Despite the significance of environmentally friendly human resource management in a variety of contexts, research indicates that a comprehensive process frame of reference for green HRM has not yet been developed. The term "Green Human Resource Management" is, by all accounts, unknown to the majority of individuals, including experts and academics in the field of human resource management. This article makes a contribution toward a better knowledge of green human resource management and concepts that are related to it in order to fill the void that this situation creates. Integrating Human Resource Management with concerns pertaining to the Environment is what is meant by "Green HRM." This article provides an overview of five eco-friendly HRM practices. They include green recruiting and selection, green job analysis and design, green training and development, green performance management, and green reward management.

Keywords: *Management of the Environment, Green Management, Green HRM, and Environmental Sustainability.*

INTRODUCTION

In this day and age, people are more aware of the environment than ever before, and they are working harder than ever to ensure that it will be around for future generations. At each international conference on the environment, the nations address the carbon credits, global warming, and the changes in the climate, which have led to earthquakes, frequent floods, the

rapid melting of glaciers, and the loss of specific species and animals (Shaikh, 2010). The specific climate change treaties of Kyoto 1997, Bali 2007, Copenhagen 2009, and the most recent Paris Agreement 2016 have whetted people's appetites for environmental sustainability on a global scale. As a result, it is even more essential for commercial enterprises to conduct themselves in an environmentally responsible manner. According to Daily and Haung (2001), there is a pressing need for businesses to find a middle ground between the inevitable expansion of industrial production and the protection of the natural environment in order to make the latter possible for future generations. In light of the current circumstances, businesses all over the world have begun to embrace the kinds of philosophical approaches that have the potential to be extremely fruitful in this context. Green HRM is one of many, but it is the most current and widely discussed one. Thinking strategically about the ways in which organizations will need to adapt to change in order to thrive in different time periods was one of the most important catalysts for the creation of new advances in HRM. Concerns about the environment have been growing on a global scale in recent years, particularly following the culmination of the industrial revolution, which accelerated the process of environmental deterioration. These worries resulted in an increase in the amount of pressure that was placed on businesses and industries to develop and apply green management by embracing environmentally friendly methods and goods. Today, more than ever before, individuals are eager to operate in an environmentally responsible manner, and they understand that they are part of society and, as a result, should implement green practices in organizations (Goyal, 2013). This is a significant shift from previous generations. According to Mampra (2013), Green HRM is defined as the use of HRM policies to encourage the sustainable use of resources inside corporate operations and promote the cause of environmentalism, which in turn enhances employee morale and satisfaction levels. (Zoogah, 2011) Others define green human resource management as the use of HRM policies, beliefs, and practices in order to encourage the responsible utilization of a company's resources and to protect an organization from any unintended consequences that may result from environmental issues.

In the modern era, numerous businesses are transitioning to more environmentally friendly methods of conducting their operations, and the use of green HRM is becoming increasingly widespread across a variety of businesses. According to Stojanoska (2016), "Green HRM" is a newly emerging subject of research in the field of organizational studies. Renwick, Redman, & Maguire (2008) are of the opinion that despite the abundance of research that has been conducted on green marketing (Peattie, 1992), accounting (Owen, 1992), and management (McDonagh and Prothero 1997), there are still gaps in the Human Resource Management (HRM) literature on the HR aspects of environmental management, also known as Green HRM. These gaps include a process model and research agenda for this topic, as well as an educational guide on the emergent literature, its extent, and coverage. In spite of the significance of environmentally friendly human resource management in a variety of contexts, research indicates that a comprehensive process frame of reference for green HRM has not yet been developed (Renwick, Redman, & Maguire, 2018). It is important to

highlight that organizations began practicing green HRM techniques even before the 1980s; nevertheless, the majority of scholarly works in HRM were not launched until after the 1990s (Arulrajah & Opatha, 2016). Because Green HRM is regarded a young and emerging subject in management, and more especially in Human Resource Management literature, there is a need for additional scholarly works to create greater understanding and awareness on the area by bridging this literature gap. This may be accomplished by increasing the number of academic works that are available.

The purpose of this study was to accomplish two goals: the first is to examine and describe the idea of green human resource management based on the existing body of research; the second is to investigate green human resource management techniques and their relevance in organizations. Researchers working in the field of human resource management, more specifically green human resource management, are likely to find this review helpful since it will provide a detailed understanding of green human resource management and other related terms that the literature shows to be insufficiently available. In addition, the purpose of this research is to demonstrate the significance of green HRM in modern organizations.

THE AMO THEORY

The AMO theory serves as a foundation for our investigation. Ability, Motivation, and Opportunity are abbreviated as "AMO." The theory states that performance is a product of three factors: an employee's aptitude, their motivation, and the opportunities they have available to perform.

This indicates that a corporation is more likely to perform better when people have the appropriate information and abilities, are well motivated, and are afforded opportunities to use their knowledge and skills in the workplace. The ability, motivation, and opportunity (AMO) framework (Appelbaum, Bailey, Berg, & Kalleberg, 2000) has been broadly recognized for describing the linkage between human resources management and performance ever since it was first introduced in the year 2000 (Marin-Garcia & Tomas, 2016). This framework was developed by Appelbaum, Bailey, Berg, & Kalleberg. The theory was selected on the basis of how applicable it is to green human resource management. When employees are provided with financial and non-financial incentives to adapt and apply green HRM, as well as opportunities to use their existing green knowledge and skills in organizations, this may affect the practice of green HRM. In addition, a number of studies, such as Renwick, Redman, and Maguire (2012), Pham, Tukov, and Phan (2019) and Alnajdawi, Emeagwali, Elrehail (2017) have utilized this theory in their research on green human resource management.

A DISCUSSION OF THE LITERATURE

When (Wehrmeyer1996) published his book as an attempt to combine the two professions of Environmental management and Human resource management, he invented the phrase "Green HRM." Green HRM stands for "green human resource management." This means that it is a

relatively new idea in the world of Management. According to Prasad (2013), "Green HRM" is defined as the contribution of HR policies to the protection and preservation of natural resources. Green HRM's primary objective is to promote sustainable development through the effective management of human resources. It has pushed the frontiers of traditional HRM practices in the direction of more environmentally friendly and sustainable techniques (Sarode et al., 2016). According to Ahmad (2015), the concept of green human resource management (HRM) today refers not only to an awareness of environmental issues but also to the social and economic well-being of both the firm and the employees within the context of a larger perspective. It can be utilized to cut costs, improve efficiencies, lower carbon footprints, raise employees' understanding of environmental issues, and launch green work-life balance programs, according to Nijhawan (2014). Ahmad (2015) places a strong emphasis on the necessity of building the link between the existing HR policies and practices and the concepts of Green HRM for the purpose of achieving sustainable development. He thinks that Green HRM has the potential to become a key business strategy for a firm if the HR Department is actively involved in the process.

In its most basic form, Green HRM can be viewed as a manifesto that contributes to the formation and development of green workers. They are makers as well as preservationists, conservationists, and non-polluters. As a result, the goal of green human resource management (HRM) is to develop, strengthen, and maintain green insights inside each employee of the firm. This is done so that each person can make the most significant contribution possible in each of their respective positions. In addition, they noted that the needs for green human resource practices consist of green competencies, green attitudes, green behaviors, and green results. According to them, you can't accomplish the company's environmental goals without having these things. According to Renwick et al. (2013), GHRM has been improved to improve the green behaviors, attitudes, and capacities of employees, motivate workers to think green, and give chances for employees to gain knowledge and skills connected with environmental sustainability. According to the explanations provided by Renwick et al. (2008) and (Muller-Carmen et al., 2010), GHRM involves the integration of a company's environmental management objectives into the HR processes of recruitment, selection, training and development, performance management and evaluation, rewards and recognition, etc. Renwick et al. (2013) conducted research in the fields of human resource management and environmental management before compiling a list of Green HRM activities based on their findings. According to Opatha and Arulrajah (2014), it is imperative that HRM functions be changed or adjusted to be green in order to guarantee that the organization receives the appropriate employee green inputs and the appropriate employee green performance of the job.

METHODS

In order to accomplish the goals outlined in the study, the method of archival research was utilized in the study. The approach consisted of reading previously published articles on green

human resource management in order to gain an understanding of the meaning of Green HRM terminologies, the applicability of five different GHRM strategies, and the significance of GHRM to modern businesses. The strategy was chosen to make it possible to explore the available existing literature in order to arrive at a more complete comprehension of green human resource management and green human resource management methods. In studies that were similar to one another, researchers Peerzdah, Mufti, and Nazir (2018), Pham, Tukov, and Phan (2019), , and Renwick, Redman, and Maguire (2008) used an approach that enabled a comprehensive investigation of green human resource management (HRM) studies. Those papers that were published after 2005 in reputed journals are the ones that were considered for inclusion in this study. In order to get an accurate picture of the current state of knowledge and trends in the subject of Green HRM, the study used recently published studies.

GREEN HUMAN RESOURCE MANAGEMENT AND GREEN HUMAN RESOURCE MANAGEMENT PRACTICES

Theoretical Definition of What We Mean when We Say "Green Human Resource Management"

According to Stojanoska (2016), the majority of people, including HRM industry professionals and academics, are not aware with the term "Green Human Resource Management." This is the case regardless of the context in which the term is used. According to Arulrajah and Opatha (2016), the reason for this is that only a small number of academics have attempted to describe the idea of green HRM in the existing literature. The phrase has been defined in a variety of ways by a variety of persons, but there is a high level of unanimity on one thing, and that is the integration of Human Resource Management with concerns relating to Environmental management and the reinforcement of ecologically friendly habits among employees. "Green HRM" refers to environmentally-friendly human resource policies and practices. These policies and practices, on the one hand, will help organizations achieve their monetary goal through environmental branding, and, on the other hand, will protect the environment from any negative impacts that might be caused by the policies and actions of the organizations. According to Hosain (2016), the idea of green human resource management (HRM) often involves using as little paperwork as possible across all HR operations, including as recruiting and selection, training, performance assessment, etc., in order to achieve a sustainable, environmentally friendly, and competitive edge through employee engagement. Although this description brings to mind one of the most essential facets of GHRM, it is overly narrow in its scope because it relates the idea of GHRM exclusively to the reduction of the amount of paper work that is done in working environments.

The term "Green Human Resources Management" (GHRM) refers to the use of methods from the field of Human Resources Management in order to raise employee commitment to issues pertaining to environmental sustainability and to promote environmentally friendly activities. It takes into account the concerns and values of Environmental Management while

using Human Resources (HR) initiatives, which generate improved efficiencies and better Environmental Performance (EP), which is required for lowering the carbon footprints left by employees (Masri & Jaaron, 2017). This paper describes green HRM as the process of making use of human resources at workplaces in order to achieve organizational goals while also making intentional efforts to ensure that the process contributes towards environmental sustainability. It is planning to use HR functions, policies, strategies, and practices as tools for environmental management at workplaces.

Management Strategies/Practices for Human Resources that are Friendly to the Environment

There are many people-management strategies that are friendly to the environment. In this article, five different eco-friendly HRM approaches are dissected and discussed. This includes green recruiting and selection, green job analysis and design, green training and development, green performance management, and green reward management. The five (5) environmentally friendly techniques for managing human resources are going to be covered in this article, starting at item 5.2.1 and going all the way up to item 5.2.5.

Recruitment and Selection Procedures for the Green Workforce

The process of hiring new employees is generally regarded as the first step in joining the organization. An organization is provided with the option to entice a candidate pool from which the most qualified individuals can be chosen to join the organization. Kiruthigaa and Viswanathan (2014) defined "green recruitment" as a recruitment procedure that does not use paper and has a little impact on the environment. E-mail, online application forms, and the Global Talent Pool are some of the internet platforms that are being utilized to solicit application submissions. In order to lessen the amount of damage done to the environment by travel-related activities, interviews are held over the phone or via video if at all possible. From this point of view, organizations are doing everything in their power to guarantee that the appropriate applicants are attracted, while also ensuring that the process is as environmentally friendly as is possible. According to Diana (2016), the use of electronic recruiting significantly cuts back on the amount of energy consumed as well as the pollution caused by the production, transportation, and recycling of paper items. Mailing, storing, handling, filing, and reporting are all examples of tasks that benefit from process automation's ability to save energy. By cutting down on paperwork associated with resumes, advertisements, and on boarding, direct cost savings can be realized.

After soliciting job prospects in a green way, organizations are expected to ensure that the suitable green candidates are selected in a green way as well. In Green selection, the selection tests can also be as much paperless as feasible, such as behavioral observation, interview, or presentation, all of which require less paper than traditional selection methods. In addition, candidates that are more environmentally aware and friendly, or who have a strong motivation to keep the office and surroundings green or natural as it is, could be given preference in

the hiring process (Hosain, 2016). This implies that whatever test is used to evaluate job candidates, the exam should be constructed in such a way that, among other criteria, people with knowledge on environmental conservation and a commitment to conserve environment are more likely to be picked for the position.

In general, "green recruitment and selection" refers to the practice of utilizing environmentally friendly approaches, tools, and technologies in the process of attracting and selecting qualified job candidates who are willing and able to fill available positions in a particular organization. When hiring new employees, different criteria are always taken into consideration; however, one of the most important factors is determining whether or not candidates are willing and able to protect the environment. Because the process of recruiting and selection plays such an important part in the hiring of new personnel, green initiatives should be effectively integrated at this point. This will assist in ensuring that candidates who are willing and able to participate in environmentally friendly projects are hired. This would also make it simpler for companies to in still environmentally responsible practices and a culture of sustainability in newly hired staff. AMO theory supports this idea because ability is one of three performance deterrents. Thus, firms should hire people who can both do their jobs and support the environment.

Analysis and Planning of Environmentally Conscious Jobs

According to Aswathapa (2012), job analysis is the process of gathering information about the knowledge, skills, and abilities that an individual should possess in order to perform a specific job effectively. According to Mwita and Buberwa (2016), the process of designing jobs involves making decisions in advance regarding how jobs will be composed with regard to roles, responsibilities, resources needed, human resource requirements, and working relationships within an organization. Job analysis and design often result in the writing of job descriptions as one of the deliverables. Job descriptions are an official framework that defines a position; they might include particular activities, responsibilities, specifications, broad goals, competences, and expertise desired by the firm (Barbouletos, 2011). From this point of view, it is possible for employers to use a method called job analysis and design to ensure that employees are not only formally or officially mandated to perform their jobs in an environmentally friendly way, but also that they have knowledge on environmental issues as one of the requirements to perform a particular job efficiently and effectively. According to the findings of Arulrajah, Opatha, and Nawaratne (2015), in some businesses, each job description includes at least one task connected to the protection of the environment, and it also clearly incorporates environmental obligations whenever and wherever they are applicable. Because of this, it is much simpler for businesses to not only officialise environmentally friendly processes but also hold workers accountable for environmentally friendly behaviours. According to the AMO, in order for employees to perform effectively, they need to be given opportunity to do so, and as a result, a supporting atmosphere is required. In support of this approach, Marin-Garcia and Tomas (2016) suggest that opportunity takes into consideration not just individual traits but also the working environment. The way in which tasks are analyzed and planned plays a

role in the work environment, and it should play a role in helping the organization achieve its goals, including its green goals.

This paper defines green job analysis and design as the process of collecting information for a specific job with the intention of preparing a job description and job specification, which will eventually lead to the selection of employees who are able to perform their duties and responsibilities in an environmentally friendly way. In order to make a job holder environmentally responsible and accountable while they are on the job, green job analysis and design seeks to guarantee that an organization determines the duties and responsibilities, skills, knowledge, and competencies that are required for a specific work. This is done in order to ensure that a job is properly analyzed and designed. Njoroge and Kwasira (2015), when referring to the AMO theory, emphasize that job design and job analysis primarily determines ability requirements and opportunity. As a result, the theory adequately reflects the need of job analysis and design in enhancing green behaviour among human resources in organizations.

Training and Development in Environmental Sustainability

In order for an organization to remain competitive in today's complex and ever-shifting environment, training and development are of the utmost importance. Training and development are basically directly tied to the performance of an individual, but the ultimate consequence of training and development goes to an organization. Green training and development involves educating employees about the importance of Environmental Management, training them in working methods that conserve energy and reduce waste, spreading environmental awareness throughout the organization, and providing opportunities for employees to engage in the process of problem-solving related to environmental issues (Zoogah, 2011). Green training and development does not end with the imparting of knowledge and skills on environmental sustainability related issues to employees as well as management; rather, it also demands a process itself to be environmentally friendly. In order to cut down on the amount of paper that is consumed, Hosain (2016) suggests that training supervisors should rely more on online course materials and case studies rather than printed handouts, books, and brochures. E-learning platforms now have the ability to participate more actively in training and development programs as a result of this. The usage of digital platforms might make it possible to cut down on paper use, which would ultimately conserve trees for both the current generation and the generations to come.

Training on environmental issues has two primary purposes. First, to correctly educate the employees about the company's environmental policies, and secondly, to adjust the activities of employees through training in order to develop a more purposeful and steady relationship of employees towards the environment (Sammalisto & Brorson, 2008 and Jabbar & Abid, 2014). Training and development programs that focus on environmental sustainability help employees become more aware of the myriad facets and the significance of environmental management. This makes it easier for them to adopt various measures of conservation, such as the management of trash inside an organization. In addition to this, it enhances a worker's capabilities to cope with a variety of challenges pertaining to the environment (Ahmad, 2015).

According to Teixeira et al. (2012), which was mentioned in Masri (2016), green training is considered to be one of the most essential tools in the process of developing human resources and aiding a transition to a more sustainable society.

Therefore, green training and development refers to the process of providing employees with the information and skills necessary to prevent or reduce environmental contamination and to preserve the natural environment in their places of employment. In addition to this, it entails the implementation of training and development programs that make use of strategies and technology that are friendly to the environment. The AMO theory postulates that an employee who possesses the appropriate skills and knowledge is more likely to perform better than an employee who does not have them. This observation is consistent with that postulation.

Management of Ecologically Responsible Performance

According to Armstrong (2006), performance management is a methodical and organized approach for enhancing an organization's overall performance through enhancing the performance of its employees and teams. Evaluation of an employee or team's performance according to predetermined standards and objectives is typically included in the scope of performance management. According to Opatha and Arulrajah (2014), every organization is tasked with the obligatory obligation of carrying out corporate environmental management, and as a result, there are environmental goals that need to be accomplished by the organization as well as environmental standards that need to be satisfied by the organization. According to Mehta and Chugan (2015), green performance management entails connecting an employee's performance evaluation to the green objectives and responsibilities outlined in their job description.

The potential to implement green performance management is available to organizations in the form of creating green goals for individual employees and teams and ensuring that these goals are effectively realized by the organizations. An evaluation can be done on a more regular basis to determine how well employees and teams are doing in their efforts to achieve the goals. Making sure that employees have green job descriptions is one of the ways that green job analysis and design may assist make green performance management easier. After that, green duties and responsibilities can be used as a measuring stick to evaluate an employee's performance on his specific job. Therefore, green performance management implies to be a methodical process through which a company assigns green goals to be achieved by individual employees and teams, and then periodically assesses how these goals are achieved while employing a variety of management strategies to assist employees and teams in achieving them effectively and efficiently.

Green performance management is a technique for boosting individual, group, and organizational performance toward green goals. The primary intention of performance management as a practice of human resource management is to facilitate employee and organizational performance. According to the AMO theory, the usage of HR practices that are targeted at improving employee performance may be considered as a composition of

three dimensions: skill-enhancing, motivation-enhancing, and opportunity-enhancing HR practices (Lepak, Liao, Chung, & Harden, 2006). These three dimensions make up the AMO theory. This indicates that AMO theory includes green performance management as one of its essential components.

Green Reward Management

According to the received knowledge, an employee incentive program that is well-designed can assist inspire workers to reach satisfactory performance levels, including environmental performance levels. According to Bratton and Bratton (2015), the compensation system is a useful indicator of how seriously an organization is committed to environmental sustainability management. According to Uddin and Islam (2015), the achievement of certain environmental initiatives should be included into the compensation system by offering employees a benefit package that rewards employees for green performance. This should be done in order to incentivize employees to work toward the goals of the environmental initiatives. Green reward management has major contributions to make when it comes to motivating managers and employees who are not in administrative positions to participate in environmental management activities at their company. Employees who have a positive impact on the company's overall environmental performance may be eligible for monetary incentives, bonuses, or cash rewards at some businesses. According to Arulrajah, Opatha, and Nawaratne (2015), certain businesses provide their workers with non-financial incentives (such as rewards, special recognitions, honors, and prizes) for achieving high levels of environmental sustainability in their work.

Therefore, green reward management refers to the process of systematically establishing and executing strategies and policies for the purpose of rewarding people and teams who are successfully contributing towards the achievement of environmental management objectives in workplaces. This process is known as a "green reward management system." The AMO hypothesis provides support for a number of critical components of the motivational process, including reward management. According to this theory, motivated workers are more likely to perform better, and as a result, businesses have a responsibility to encourage higher levels of productivity in their workforce by providing appropriate incentives. According to this point of view, green rewards management is vital in developing green culture among employees. As a result, employees who demonstrate green behaviour is required to be rewarded both financial and non-financial benefits for effectively achieving green organisational goals.

The Importance of Eco-Friendly HRM Practices in Modern Companies

According to Pandey, Viswanathan & Kamboj (2016), green organizations are the most sought-after employers, and any potential hiring would like to be affiliated with such an employer so that they could learn and add value to their profile. This indicates that businesses that practice Green HRM have a competitive advantage over other businesses when it comes to recruiting capable employees. When there are more people applying for jobs, there is a greater possibility that companies will find individuals who meet their requirements.

According to Sharma (2016), many environmentally conscious businesses may now boast lower employee turnover rates when compared to their non-sustainable competitors. In this light, retaining employees can be accomplished through the use of environmentally friendly HRM techniques. The practice of green HRM can be seen of as one of the potential solutions to the problem of financial loss caused by staff turnover in organizations. According to Tiwal and Bangwal (2015), businesses that are unaware of the green concept, green practices, and green policies may find that they lose employees who are talented or innovative to competitors who have implemented Green Practices or made their image as an environmentally friendly company and offer socially responsible incentives.

Green human resource management strategies lead to the development of sustainability since they place an emphasis on the reservation and preservation of natural resources as well as the reduction of waste. According to Chowdhury, Sanju, and Asaduzzaman (2017), there is a significant connection between Green Human Resource Management (GHRM), Corporate Social Responsibility (CSR), and the environmental sustainability of an organization. It's possible that organizations will strive to provide finished goods and services through green HRM, but they may also contribute to saving the earth from environmental deterioration as part of their CSR efforts. This is an important aspect of corporate social responsibility. According to Sharma (2013), firms that place an emphasis on corporate social responsibility often have an easier experience when interacting with politicians and government regulators. Businesses who appear to have a cavalier attitude toward their social responsibilities, on the other hand, frequently find themselves having to defend themselves against a variety of inquiries and investigations, which are frequently initiated at the demand of public service organizations. In a broader sense, numerous stakeholders believe that it is more suitable to work for or associate themselves with businesses that demonstrate social responsibility.

CONCLUSION AND SUGGESTIONS FOR FURTHER STUDY

The process of utilizing human resources in the workplace with the intention of achieving organizational goals while also making conscious efforts to ensure that the process contributes to the continued viability of the natural environment is referred to as "green HRM." Green human resource management is still a relatively new and developing field that requires additional attention from scholars as well as HR practitioners. There is, it must be admitted, a significant literary void in this area, which makes the need for additional literature works urgent. Green human resource management confers a variety of benefits on organizations, including those associated with corporate social responsibility and business success, in addition to enabling environmental sustainability. It is expected that businesses that are willing and able to implement Green HRM will be able to attract a greater number of customers and shareholders while still conforming to legal and ethical norms.

According on the results of the study, the following are some recommendations: In the first place, additional training programs need to be developed and made available to members of diverse organizations, both managerial and non-managerial, in order to increase knowledge

and comprehension of green human resource management. Second, in order to develop more environmentally conscious graduates, educational institutions need to incorporate sustainable human resource management (SHRM) into their course offerings. Additionally, there is a need for additional research to be conducted in the field of green human resource management in order to provide additional evidence-based findings that would illustrate the significance of green HRM in modern organizations.

REFERENCES

[1] Ahmad, S. (2015). Green Human Resource Management: Policies and Practices. *Cogent Business & Management*, 5(1), https://doi.org/10.1080/23311975.2015.1030817.

[2] Alnajdawi, S., Emeagwali, O.L. & Elrehail, H. (2017). The Interplay among Green Human Resource Practices, Organisation Citizenship Behavior for Environment and Sustainable Corporate Performance: Evidence from Jordan. *Journal of Environmental Accounting and Management*, 5(3), 171–184.

[3] Armstrong, M. (2006). A Handbook of Human Resource Practice. London: Kogan Page Limited.

[4] Arulrajah, A. & Opatha, H. (2016). Analytical and Theoretical Perspectives on Green Human Resource Management: A Simplified Underpinning. *International Business Research*, Vol. 9 (12), 153–164.

[5] Aswathapa, K. (2012). Human Resource Management: Text and Cases, 6th Ed., New Delhi: Tata McGraw Hill Education Private Company.

[6] Bangwal, D. & Tiwari, P. (2015). Green HRM – A way to greening the environment. *Journal of Business and Management*, Vol. 17(12), 45–53.

[7] Barbouletos, S.M. (2011). Discrepancy between Role Expectations and Job Descriptions: The Impact on Stress and Job Satisfaction. A Capstone project presented in partial fulfillment of the requirements for the degree of: Master of Arts in policy Studies. University of Washington Bothell.

[8] Bratton, A. & Bratton, J. (2015). Building Green Enterprises through HRM. A White Paper. GSB Insight. Cania, L. (2014). The evolution of human resource management: Past, present and future. *The Macrotheme Review* 3(9), 74–83.

[9] Chowdhury, S.R., Sanju, N.L., Asaduzzaman, K.M. (2017). Green HRM Practices as a Means of Promoting CSR: Suggestions for Garments Industry in Bangladesh. *Global Journal of Management and Business Research: Administration and Management*, 17 (6).

[10] Daily, B. F. and Huang, S. (2001). Achieving Sustainability Through Attention to Human Resource Factors in Environmental Management, *International Journal of Operation and Production Management*, 21(12), 1539–1552.

[11] Deshwal, P. (2015). Green HRM: An Organisational Strategy of Greening People. *International Journal of Applied Research*, 1 (13), 176-181.

[12] Diana, A.C. (2016). A Study on Effectiveness of Green Recruitment Practices among HR Executives of IT Sector. *Journal of Business and Management*, 8–11.

[13] Goyal, M. (2013). Future Outlook of Green Management Practices. *Journal of Business and Management*, 14(6), 68-72.

[14] Heslinda, A. (2009). Evolving terms of human resource management and development. *The Journal of International Social Research*, 2(9), 181–185.

[15] Hosain, S. & Rahman, S. (2016). Green Human Resource Management: A Theoretical Overview. *Journal of Business and Management*, Vol 8 (16), 54–59.

[16] Jabbar, M. & Abid, M. (2014). GHRM: Motivating Employees Towards Organisational Environmental Performance, 2(4), MAGNT Research Report, 267–278, DOI: dx.doi.org/14.9831/1444-8939.2014/2-4/MAGNT.34.

[17] Khan, R., Khan, F. & Khan, M. (2011). Impact of Training and Development on Organisational, *Global Journal of Management and Business Research*, 11(7), 1–17.

[18] Kirthigaa, K. & Viswanathan, M. (2014). A Study on Awareness of Green Recruitment with Special Reference to General Public. *International Journal of Research and Development – A Management Review*, 3 (2), 2319–5479.

[19] Lepak, D.P., Liao, H., Chung, Y. and Harden, E.E. (2006). A conceptual review of human resource management systems in strategic human resource management research. *Research in Personnel and Human Resource Management*, 25(6), 217–271.

[20] Marin-Garcia, J.A. & Tomas, J.M. (2016). Deconstructing AMO framework: A systematic review. *Intangible Capital*, 12(4), 1040–1087.

[21] Masri, H. (2016). Assessing Green Human Resource Management Practices in West Bank: An Exploratory Study. Thesis Submitted for the Partial Fulfillment of Requirement for Degree of Master of Engineering Management, An-Najah National University, Palestine.

[22] Masri, H.A., & Jaaron, A.A. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of Cleaner Production*, Vol. 143, 474–89. https://doi.org/10.1016/j.jclepro.2016.12.087

[23] Mehta, K. & Chugan, P. (2015). Green HRM in Pursuit of Environmentally Sustainable Business. *Universal Journal of Industrial and Business Management* 3(3): 74–81, DOI: 10.13189/ujibm.2015.030302.

[24] Muller-Carmem, M., Jackson, S., Jabbour, C.J.C. and Renwick, D. (2010). Green human resource management, *Zeitschrift für Personalforschung*, 24(1), 95–96.

[25] Nijhawan, G., Green HRM- A requirement for sustainable Organisation. Paripex- Indian Journal of Research, 2014, 69–70.

[26] Pandey, S., Viswanathan, V. & Kamboj, P. (2016). Sustainable Green HRM – Importance and Factors affecting Successful Implementation in Organisations. Sustainable Green HRM – Importance and Factors affecting Successful Implementation. *International Journal of Research in Management and Business*, 2(3), 11–29.

[27] Peerzadah, S.A., Mufti, S., Nazir, N.A. (2018). International Journal of Enhanced Research in Management & Computer Applications. *International Journal of Enhanced Research in Management & Computer Applications*, 7(3), 790–795.

[28] Pham, N.T., Tučkov, Z., & Phan, Q.P.T. (2019). Greening human resource management and employee commitment toward the environment: An interaction model. *Journal of Business Economics and Management*, 20(3), 446–465. https://doi.org/10.3846/jbem.2019.9659.

[29] Renwick, D.W., Redman, T. & Maguire, S. (2012). Green Human Resource Management: A Review and Research Agenda. *International Journal of Management Reviews*, 15(1), 1–14.

[30] Renwick, D., Redman, T. & Maguire, S. (2008). Green HRM: A Review, Process Model, and Research Agenda. Discussion Paper Series, Paper No. 2008.01. The University of Sheffield

[31] Renwick, D.W.S. Redman, T., and Maguire, S. (2008). Green HRM: A Review, Process Model, and Research Agenda, University of Sheffield Working.

[32] Renwick, D.W.S. Redman, T., and Maguire, S. (2013). Green Human Resource Management: A Review, and Research Agenda, *International Journal of Management Review*, 15, 1–14.

[33] Shaikh, M., (2010). Green HRM: A requirement of the 21st century. *Journal of Research in Commerce and Management*, 1, 122–127.

[34] Sharma, K. (2016). Conceptualization of Green HRM and Green HRM Practices: Commitment to Environment Sustainability. *International Journal of Advanced Scientific Research and Management*, 1(8), 74–81.

[35] Sharma, Y. (2013). Role of Corporate Social Responsibility in Organisation. *Journal of Business and Management*, Vol. 13 (4), 1–8.

[36] Stojanoska, A. (2016). Green Human Resource Management: A Case of Gorenje Group. Master's Thesis, University of Ljubljana.

[37] Uddin, M.M. & Islam, R. (2015). Green HRM: Goal Attainment through Environmental Sustainability. *The Journal of Nepalese Bussiness Studies*, 9 (1), 13-19.

[38] Wehrmeyer, W. and Parker, K.T. (1996). "Identification and relevance of environmental corporate cultures as part of a coherent environmental policy", 163–185.

[39] Zoogah, D. (2011). The dynamics of Green HRM behaviours: A cognitive social information processing approach. *Zeitschrift fur Personalforschung*, 25, 117–139.

New Workplace Dynamics in the Post-Covid World

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Abstract

Workplace dynamics have been changing since the start of this century as new technological developments and advancements are evolving in and around the work culture and professionals. However, due to global outbreak of Coronavirus the impact on workplace dynamics has been enormous and over and above the expected growth rate. Covid promoted the culture of work from home to every household and has survived even post covid. The study identifies the reasons for change in work place dynamics including the recent spread of covid, technical advancement and other relevant reasons. The scope of work from home as a substitute to work from office is also conversed in the study. The research also discusses the factors affecting peer relations because of change in workplace dynamics due to post covid circumstances.

Keywords: *Workplace Dynamics, Covid, Work from Home, Peer Relations, Remote Work.*

INTRODUCTION

Evolution in technology, social and political (I.L.O., 2020) sector with the beginning of 21st century has led to many changes and adaptations in the workplace and its related dynamics. The recent changes in the work culture such as gig working, work from home, outsourcing has transformed the dynamics of workplace in the past decade. The pace of growth of these dynamics was not visible to naked eyes till the world faced Covid. With the spread of covid the workplace dynamics observed a 360-degree transformation, work from home and flexibility in work became a household thing.

With the spread of covid, to secure the workforce and employees and their family's life and livelihood, organisations have adopted remote work arrangements, distancing for sustaining organizational commitments. The spread of virus led to change in the work practices, work life balance, bond amongst the workforce (I.L.O., 2020).

With the change in workplace dynamics, various administrative and bureaucratic organizations are analysing and interpreting the adoption of work from home culture. Due to virus the working from home trended as the new normal, however various organizations are concerned whether this is biggest disruption in the world of work. As work from home might become new normal even post pandemic (Vyas, L., 2022).

Many organizations forecasted the remote working earlier than their competitors and used it as a tool to strengthen the psychological contract between employees and organizations. The employees perceived their organization to be supportive if they were provided with remote work (Danna and Landry 2011). Post covid, when many employees were returning back to work from office they were in dilemma and preferred the organizations which are providing flexibility in the working.

However, the post covid work dynamics has led to blur the gap between work life and personal life. In various instances it has been observed that home-based working or remote working led to disruption of work life balance. (Grant et al., 2019; Nakrošiene & Butkevičienė 2016; Palumbo et al., 2020)

The change in workplace dynamics was initiated with the beginning of this century which was assumed to grow by the mid of the century however, with the spread of covid the pace of changes in the workplace dynamics grew at a rate which was far above than the expectations. The workforce accepted the remote working but had faced issues in the form of increased disruption in work life balance.

LITERATURE REVIEW

In the pre covid era few organizations were providing work from home opportunities to attract and maintain talented staff. This tool was used as a competitive advantage by certain organizations. Eversole, Venneberg, and Crowder (2012), Morgan (2014) to enhance work life balance (Felstead and Henseke 2017).

Pre-pandemic era has witnessed very few employees working from home, that too was counted as privilege. But as soon as pandemic hit the world work from home became the trend as compared to standard pattern of working from home. Covid turned out to be working as a catalyst for transforming work place dynamics by encouraging work from home as compared to previously designated workplace location (de Lucas Ancillo et al., 2020; Kniffin et al., 2021; Ratten, 2020; Savić, 2020).

The change of dynamics is majorly seen in white collar jobs as compared to blue collar jobs. Due to work from home individuals have to experience shift in the working hours, productivity and technical advancements. White collar jobs have undergone a complete transformation. (Caringal-Go et al., 2021; Wong et al., 2021).

Various scholars and researchers presented and discussed their views and one of the most accepted views were that workplace dynamics can be categorized as acceleration, normalization, and remodelling. Acceleration is the phase where already existing changes and development in the world of work were paced due to presence of covid. Normalization can be stated as the phase where the practices that were considered exclusive were now readily accepted and adopted by the various workplaces. Remodelling refers to a modification or alteration of the existing pre-COVID set-up in line with the changes ushered in by the pandemic (Vyas, L., 2022).

Change in workplace dynamics with flexibility and remote working, symbolizes the employer's willingness to make difference in the environment of work as needed by employees

(Shockley and Allen 2012). Another positive taken from changing workplace dynamics is that employees consider themselves as a fit and appropriate candidate leading to positive role adjustment (Shockley and Allen 2010).

Work-life balance has been a struggle for many, managing the time and conflicts arising in family roles and responsibility and work-related roles and responsibility has been a challenge for many at an individual level (Saroj and Greenhaus 2002; Shockley and Allen 2012). The mismatch in maintaining the work life balance before covid was difficult but with the introduction of remote working the related stress could be diluted.

Remote working reduced the interaction amongst the informal network in the company leading to less interaction with the weaker ties which caused a weak bond amongst the peers and colleagues. The shift in work from home lead to improvise the bonds with stronger ties, however reducing the unnecessary interactions. The time spend the stronger bonds increased during the covid and it sustained throughout the work from home (Yang et al., 2022).

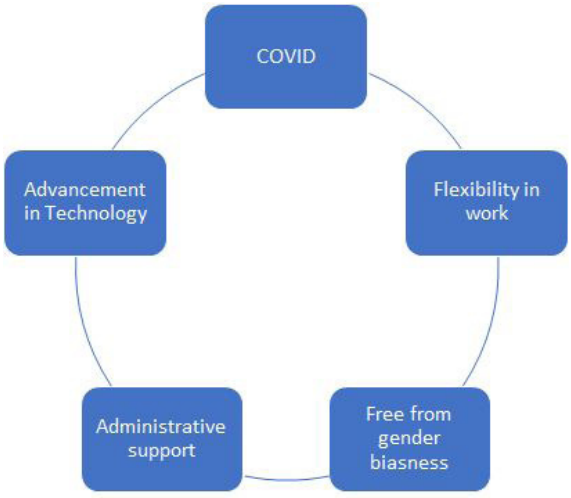
During the covid, the meetings became virtual as compared to previous office meetings. Also, the meetings have been renewed in the form of induced interest that how virtual meetings are conducted as the workers are communicating more by using mails.

REASONS BEHIND THE SHIFT IN WORKPLACE DYNAMICS

The workplace dynamics saw a huge shift since the explosion of covid in 2019. Multiple reasons accumulated there on for the support of remote and hybrid working. The employee's favourability to work from home culture also induced the changes in dynamics.

Covid

The pandemic in general, forced the organization as well as employees to look forward to change in work stations to maintain the flow of work. Many workers shifted to new workplace



Source: Compiled by author on the basis of literature

dynamics without any preparation as the pandemic didn't gave any time to prepare (Bin *et al.,* 2021). The presence of virus created the buzz which continued to survive the market even after the situations were under control.

Flexibility in Work

One of the major reasons behind the shift of workplace dynamics is the need of flexibility. The freedom in the work and its environment led to the shift initially however, it was accessible to very few till the pandemic hit the world. Post pandemic more than half of white-collar jobs turned remote leading to a complete transformation of the work place.

Other than covid there are numerous reasons for the 'flexplace", i.e., flexibility in the location where work is completed. Transportation and urban planning researchers have highlighted the boons of remote work as it helps in reducing pollution, emission of harmful gases, fuel consumption, (Allen *et al.,* 2013; Gajendran and Harrison 2007; Raghuram *et al.,* 2019) and helps in saving of natural resources as well as saves various costs incurred on maintenance.

Free from Gender Biasness

The workplace dynamics are engrossed with the gender biasness as males and females are being differentiated for challenging tasks as well as promotions. However, covid aided in blurring the gender biasness as women were more actively participating with the flexibility and remoteness in work.

Flexibility in work allows a mother to pursue a full-time job even after being involved with maternal responsibilities (Chung and van der Horst, 2018). However, earlier few barriers were present such as ideal work culture (Lott and Abendroth, 2020; Peters and Jan Blomme, 2019) and gendered norms (Blair-Loy, 2001), flexibility and remoteness in workplace allows to remove gender biasness (Janet and Stokoe, 2005).

Administrative Support

Remote working need inculcating few technical skills which was difficult initially due to pandemic, however with the support of Human Resource Development (HRD) practitioners such specific training can be facilitated for increasing productivity and satisfaction (Bierema, 2020) The administrative support includes the training of middle and functional level managers and supervisors. These skills aid in guiding and leading the hybrid and remote workers (Gascoigne 2021; McCarthy et al. 2020), thus leading to changes in workplace dynamics.

Advancement in Technology

The 21st century is the century of science and technology, the use of ICT tools was already increasing rapidly whether it is use of artificial intelligence, data analytics, uploading of documents and every necessary data online and much more.

The recent studies have disclosed the importance of technological tools for remote work and its success (Golden and Raghuram 2010). During covid, many households became tech savvy which resulted in an acceptance of new workplace which is more comfortable and relaxing as compared to office. Therefore, advancement in technology paved the way for shift in dynamics.

CAN WORK FROM HOME SUBSTITUTE WORK FROM OFFICE PERMANENTLY?

Evolution in the world of business has been seen over centuries, likely the shift of workforce from work from office to work from home is the trending change. The recent development in the world due to the spread of covid as well as advancement in technology and preference to flexibility has certainly lifted the growth rate of WFH rapidly. Although, this shift has seen phases such as

1. Pre-pandemic mindset
2. Pandemic mindset
3. Post-Pandemic mindset

Pre-Pandemic mindset

Earlier than December 2019, the world was running normally the workforce was growing and adapting advancements in the field of technology. The mindset of employee as well as of employer suggested that efficiency and effectiveness can be achieved only when management keeps a close watch. The acceptance for remote and flexible working was minimal. The workforce believed that it leads to:

1. **Disruption in work life balance:** The WFH was initially unacceptable as the mindset prevailed that work life balance will be deteriorated and it will invite unwanted stress in the employee's life and the expectations of management cannot be achieved. Further adding to the thought, it can be said that the pull and push between work and family responsibilities will suffer. Managing the two aspects of human life can get difficult and equal participation might not be there (Voydanoff, 2005). The work life balance will be disrupted with the merger of two most important elements of human life.
2. **Performance Deterioration:** The performance of employees may deteriorate (Burk, Pechenik Mausolf, and Oakleaf 2021) if the remote working was adopted due to less supervision from the management and team leaders. Therefore, the work from home was not given any value in the pre pandemic era over the work from office. The same old workplace dynamic was appreciated.

Pandemic Mindset

As the world faced virus, situations changed, the world stopped, functionality of business activities looked like a dream. However, the organizations globally adapted and the workplace

took a shift from office to home or any other flexible location (de Lucas Ancillo et al., 2020; Kniffin et al., 2021; Ratten, 2020; Savić, 2020). This shift was forecasted but many years later and slowly as compared to what actually happened after the world saw the biggest setback in the form of inflation of the covid.

Working from home, wearing pyjamas and attending the meetings became a trend that is still running for many (Vyas, L., 2022). The trend that started has shown no sign of reduction as the employees adapted the remote working along with their families.

Post-Pandemic Mindset

As the world understood the pandemic and body became immune to the virus, post-pandemic people saw a mixed reaction, many appreciated the organizations acceptance towards remote working whereas many were upset as working from home deteriorated their routine and habits. The mindset that prevails today is mixed of positives and negatives for remote working as:



Source: Compiled by author on the basis of literature

1. **Saves resources:** Researchers suggested that the work from home saves the time from travel along with the energy which in turn can be utilised around the family for maintaining balance (Raghuram et al., 2019). The time spent on movement of human assets and resources can be saved with the adoption of remote working as compared to previously accepted office working.
2. **Increases family time:** A harmonious balance was created with the enforcement of remote working as it allows employees to maintain work along with their personal life without hampering it much as it was happening earlier (Feeney & Stritch, 2019; Shagvaliyeva & Yazdanifard, 2014). Friendly and familiar place helps the workforce to improve their productivity because of the belongingness in the environment.

3. **Reduces expenses:** The employers accepted the work from home as it reduced the cost of basic maintenance as well as cost of a physical office. The fixed costs along with working cost of a company could be reduced leading to a positive reaction from both employer and employee.
4. **Workload and pressure:** According to many research, employees highlighted the increase in workload and pressure as the expectations included all time availability and unnecessary expectation to be always online with an immediate response (Bin et al. 2021) which might be difficult to maintain due to merger of two parts of life.
5. **Lack of physical space at home:** The flexibility in workspace created another point of worry in the form of dedicated workstation for the smooth conduction of workplace responsibilities. Therefore, necessary requirements need to be maintained in the limited space of an employee with multiple individuals having jobs and school to attend (Shirmohammadi, M., Au, W. C., & Beigi, M. (2022). The privacy required for efficiency in work could not be created due to limit in the resources available. Reorganizing the home as office or school may hamper the calmness and positivity of home for many.
6. **Increased obesity:** The workforce became lazy and obese with the reduction in physical activities and movement, as for most of the time an individual is struck in front of the work desk. Therefore, many people started suffering from health diseases such as high or low blood pressure, insomnia and many more.
7. **Lack of social interaction:** Many individuals faced the issue of depression with the introduction of work from home due to lack of social interaction. Individuals started feeling lonely and no one to listen and guide which caused many suicidal attempts as well.

With the study we came to understand that in the near future many white- and blue-collar jobs will promote flexibility in location and change in policy formulation as more and more remote jobs will be created (Vyas, L. 2022). However, it should also be understood that it will lead to disruption of work life balance and certain health issues amongst the future generations making them lazy and less social.

Certainly, work from home will overtake work from office but complete whitewash of work from office is not the future of workforce globally. As the productivity of work, increased working hours, and traditional boundaries of work and home are also vanishing (Caringal-Go et al., 2021; Wong et al., 2021).

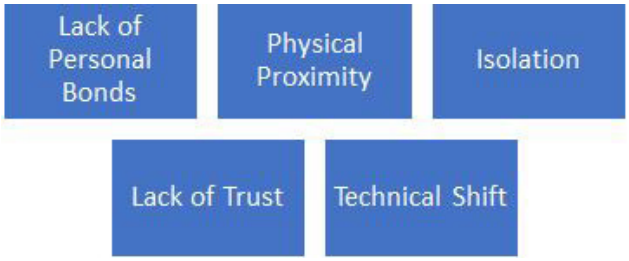
Post-Pandemic the workforce is certainly feeling the pressure of working remotely as it is leading to multiple issues around family and their work efficiency. However, the existence of remote work culture is the new work culture which has made the way in the lives of working professionals as many are accepting remote working as a best substitute. The organizations are analysing the employee set and taking decisions accordingly.

FACTORS AFFECTING PEER RELATIONS DUE TO REMOTE WORKING

The culture of remote working transformed the social collaboration and communication amongst the employees as major part of communication in work from home happens via

telecommunication, mails, messages or video calls. This created a gap amongst peers and colleagues as they were interacting according to their strong ties and weak tie ups (Bernstein et al., 2020), gap keep on increasing due to lack of physical and personal interaction.

The remote working showcased a less stable and more isolated communication (Larson et al., 2021) amongst the groups as the interaction included was just including work responsibilities, lack of personalized element and belongingness. Below listed are the few factors which have been observed through study of various research works done previously.



Source: Compiled by author on the basis of literature

1. **Lack of personal bonds:** With the transition in working environment, the personal bond or the bonds amongst the office colleagues started to vanish as the interaction was more or less based on ICT tools including zoom, google meet, mails and much more. The personal touch and the element of presence is completely out of place. Due to this the relations and bonds started weakening and ended up being extremely formal.
2. **Physical proximity:** Multiple organizations in and around the world accepted the remote work culture as a new workplace dynamic in consideration of it as a family-friendly option to improve the work-life balance (Hyland, Rowsome, and Rowsome 2005). However, the physical proximity of work and life was devastating for many as the focus could not be retained and certainly created the gaps amongst the peers due to pressure from family or vice versa. The social interaction went under transformation.
3. **Isolation:** The workforce faced the issue of changes in the relations of peer groups and colleagues as the isolation is a biggest challenge in front of an employee (Bin et al., 2021), while working remotely. The connection amongst the workforce got lost which lead to weak social bonding and isolated work culture.
4. **Lack of trust:** Work from home, promoted hiring remotely, resulting in no physical contact with the colleagues, which in hand resulted in building least trust amongst one another. The various team activities were done remotely to work on creating a belonginess, however the distance won the race. Therefore, many colleagues working together but still not trusting the skills of their remotely working peers.
5. **Technical shift:** In the world of flexible working, including work from home and remote working the employees are obliged to respond immediately to work calls even after working hours as the assumptions were made for all time availability. The main reason behind the assumption is the advancement in ICT, the technology has grown to the extent that working away from office is adapted in the most white-collar jobs.

This all-time availability led to blur the gaps between work and leisure and an employee always felt tired and under fatigue due to overlapping of work and personal life (Palumbo, 2020). The contributor to this is ICT as the technical platforms created a burden on employees psychological (Carillo et al., 2021; Ipsen et al., 2021) as well as physiological. The burden added due to lack of resources and understanding of equipments (Carillo et al., 2021; Ipsen et al., 2021). This shift of technology also led way for changes in the peer relations as the employee was already spending most of the time on screen that's why they avoided any further interactions with their colleagues and peers.

From the above discussion, we can understand that social connections with the strong ones survived whereas the bonds that were building or were budding in labour got diluted. The peers had least availability of time and trust to make bonds online. The inclusion of technology increased the distance which it supposed to reduce.

CONCLUSION AND RECOMMENDATION

Multiple changes were initiated as the world encountered Covid, the workplace dynamics were changed, the working culture shifted from work from office to work from home as well as the social interaction and bond took a shift amongst the peers. From the above discussion it can be concluded that definitely the world is moving in a new direction, where the employee as well as employer is ready to adapt and accept the changes in workplace. The remote working culture has been accepted by the families as well as it increases the visibility and touch around the near ones.

It can also be concluded from the above discussion that flexibility in work has seen transition in the 21st century, pre pandemic phase has shown less agreeableness for remote working, more or less it was a privilege for top level management only back then. In the study it has been also found that remote culture took pace only with the spread of the virus as a substitute to keep the world working. But as the virus dropped, the workforce became habitual of remote working which led to the demand amongst the employee as well as the employer to change the workplace dynamics.

However, the work from culture, has its own demerits as many people have addressed that remoteness in work is making the workforce lazy, less efficient, drop in productivity, work is accessing the working hours, the gap between the professional and personal life is also diminishing. The isolated work culture also created a social drift amongst the peers as the lack of mutual trust and belongingness prevails. The extreme dependency on ICT tools also caused fatigue and lead to setting boundaries and limits.

On the basis of above study, I conclude my study by sharing the following recommendations:

1. **Hybrid workplace:** The first recommendation, is to encourage hybrid working, i.e., to adapt both online and offline working. It will help in diluting the isolated work culture and will increase efficiency amongst the workforce. The managers also need to be trained for guiding, supporting and managing the workforce (Gascoigne 2021; McCarthy et al., 2020) efficiently and to make necessary technical requirement.

2. **Fixed working hours:** The next recommendation, is to fix the timings for being working and online such that the employee work life balance can be maintained (Shirmohammadi, M., Au, W. C., & Beigi, M., 2022).

   The transparency in working time will favour the employee as well as employer along with their families. The expectations of family and bosses can be both maintained if a clear line is drawn. Therefore, the suggestion is to include such technical signals which highlight the employee regarding access of working hours. This will support the new workplace dynamics.
3. **Regular social interaction amongst colleagues:** The last recommendation, highlights the value and importance should be given to increasing social bonding amongst the colleagues. Special activities and events should be planned by the higher management to reduce the differences arising because of remoteness. The opportunity should be provided to socialise by providing a break room (Hansen, M.T. 1999), such that hesitations can be breached.

LIMITATION

This study has few limitations as it is a review paper based on the past research work done nationally and internationally. The study is conducted in a short time span therefore it might have skipped certain important factors. Also, no primary data was collected for the study therefore the conclusions drawn are based on the previous research and data. The research has conclusions which are generic in nature, it lacks uniqueness and specificness. The study is a review of the existing information available which can lead to duplicity of the thoughts. In future studies, the focus should be on collecting primary data sources for analysing and interpreting the information. Also, various other related concept and ideas should be evaluated such as whether remote working can be prevalent at every level of business or will it retain to few desk jobs. The study can be further leaded in the direction of analysing the gender wise preferences of remote working and acceptance to new workplace dynamics.

REFERENCES

[1] Allen, T.D., R.C. Johnson, K.M. Kiburz, and K.M. Shockley (2013). "Work–Family Conflict and Flexible Work Arrangements: Deconstructing Flexibility." *Personnel Psychology* 66 (2): 345–376.

[2] Ancillo, A.D.L., del Val Núñez, M.T., & Gavrila, S.G. (2021). Workplace change within the COVID-19 context: A grounded theory approach. *Economic Research-Ekonomska Istraživanja*, 34(1), 2297–2316.

[3] Bernstein, E., Blunden, H., Brodsky, A., Sohn, W., & Waber, B. (2020). The implications of working without an office. *Harvard Business Review*, 15.

[4] Bierema, L.L. (2020). HRD research and practice after 'The Great COVID-19 Pause': The time is now for bold, critical, research. *Human Resource Development International*, 23(4), 347–360.

[5] Bin, W., Y. Liu, J. Qian, and S. K. Parker (2021). "Achieving Effective Remote Working during the COVID-19 Pandemic: A Work Design Perspective." *Applied Psychology* 70 (1): 16–59.

[6] Blair-Loy, M. (2001). "Cultural Constructions of Family Schemas: The Case of Women Finance Executives." *Gender and Society* 15 (5): 687–709.

[7] Burk, B.N., A. Pechenik Mausolf, and L. Oakleaf (2021). "Pandemic Motherhood and the Academy: A Critical Examination of the Leisure-Work Dichotomy." *Leisure Sciences* 43 (1–2): 225–231.

[8] Carillo, K., G. Cachat-Rosset, J. Marsan, T. Saba, and A. Klarsfeld (2021). "Adjusting to Epidemic-Induced Telework: Empirical Insights from Teleworkers in France." *European Journal of Information Systems* 30 (1): 69–88.

[9] Caringal-Go, J.F., Teng-Calleja, M., Bertulfo, D.J., & Manaois, J.O. (2022). Work-life balance crafting during COVID-19: Exploring strategies of telecommuting employees in the Philippines. *Community, Work & Family*, 25(1), 112–131.

[10] Chung, H., & M. van der Horst (2018). "Flexible Working and Unpaid Overtime in the UK: The Role of Gender, Parental and Occupational Status." *Social Indicators Research* 151 (2): 521–545.

[11] Covid, I.L.O. (2020). and the world of work: Impact and policy responses. *ILO Monitor*, 137, 241–248.

[12] Danna, G., & E.M. Landry (2011). "Negotiating a Flexible Work Arrangement: How Women Navigate the Influence of Power and Organizational Context." *Journal of Organizational Behavior* 32 (8): 1163–1188.

[13] Eversole, B.A.W., D.L. Venneberg, & C.L. Crowder (2012). "Creating a Flexible Organizational Culture to Attract and Retain Talented Workers across Generations." *Advances in Developing Human Resources* 14 (4): 607–625.

[14] Feeney, M.K., & Stritch, J.M. (2019). Family-friendly policies, gender, and work-life balance in the public sector. *Review of Public Personnel Administration*, 39(3), 422–448.

[15] Felstead, A., and G. Henseke (2017). "Assessing the Growth of Remote Working and Its Consequences for Effort, Well-Being and Work-Life Balance." *New Technology, Work and Employment* 32 (3): 195–212.

[16] Gajendran, R.S., & D.A. Harrison (2007). "The Good, the Bad, and the Unknown about Telecommuting: Meta-Analysis of Psychological Mediators and Individual Consequences." *Journal of Applied Psychology* 92 (6): 1524–1541.

[17] Gascoigne, C. (2021). Flexible Working: Lessons from the Pandemic. UK: Chartered Institute of Personnel and Development (CIPD).

[18] Golden, T.D., & S. Raghuram (2010). "Teleworker Knowledge Sharing and the Role of Altered Relational and Technological Interactions." *Journal of Organizational Behavior* 31 (8): 1061–1085.

[19] Grant, C.A., Wallace, L.M., Spurgeon, P.C., Tramontano, C., & Charalampous, M. (2019). Construction and initial validation of the E-Work Life Scale to measure remote e-working. *Employee Relations*, 41(1).

[20] Hansen, M.T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44(1), 82–111.

[21] Hyland, M.M., C. Rowsome, & E. Rowsome (2005). "The Integrative Effects of Flexible Work Arrangements and Preferences for Segmenting or Integrating Work and Home Roles." *Journal of Behavioral and Applied Management* 6 (2): 141.

[22] Ipsen, C., M. van Veldhoven, K. Kirchner, & J. Paulin Hansen. 2021. "Six Key Advantages and Disadvantages of Working from Home in Europe during COVID-19." *International Journal of Environmental Research and Public Health* 18 (4): 1826.

[23] Janet, S., & E. H. Stokoe. 2005. "Discourses of Work–Life Balance: Negotiating 'Gender Blind' Terms in Organizations." *Gender, Work & Organization* 12 (2): 147–168.

[24] Kniffin, K. M., Narayanan, J., Anseel, F., Antonakis, J., Ashford, S. P., Bakker, A.B., ... & Vugt, M. V. (2021). COVID-19 and the workplace: Implications, issues, and insights for future research and action. *American Psychologist*, 76(1), 63.

[25] Larson, J., Zuzul, T., Pahnke, E.C., Shah, N. P., Bourke, P., Caurvina, N., ... & Priebe, C.E. (2021). Dynamic silos: Modularity in intra-organizational communication networks before and during the COVID-19 pandemic.

[26] Lott, Y., & A.-K. Abendroth (2020). "The Non-Use of Telework in an Ideal Worker Culture: Why Women Perceive More Cultural Barriers." *Community, Work & Family* 23 (5): 593–611.

[27] McCarthy, A., Ahearne, A., Bohle-Carbonell, K., Ó Síocháin, T., & Frost, D. (2020). Remote working during COVID-19: Ireland's national survey initial report.

[28] Morgan, J. (2014). The future of work: Attract new talent, build better leaders, and create a competitive organization. John Wiley & Sons.

[29] Nakrošienė, A., & Butkevičienė, E. (2016). Nuotolinis darbas Lietuvoje: Samprata, privalumai ir iššūkiai darbuotojams. *Filosofija. Sociologija*, 27(4), 364-372.

[30] Palumbo, R. (2020). Let me go to the office! An investigation into the side effects of working from home on work-life balance. *International Journal of Public Sector Management*, 33(6/7), 771–790.

[31] Peters, P., and R. Jan Blomme (2019). "Forget about 'The Ideal Worker': A Theoretical Contribution to the Debate on Flexible Workplace Designs, Work/Life Conflict, and Opportunities for Gender Equality." *Business Horizons* 62 (5): 603–613.

[32] Raghuram, S.N., J. Sharon Hill, L. Gibbs, & M.M. Likoebe (2019). "Virtual Work: Bridging Research Clusters." *Academy of Management Annals* 13 (1): 308–341.

[33] Ratten, V. (2020). Coronavirus (Covid-19) and entrepreneurship: changing life and work landscape. *Journal of Small Business & Entrepreneurship*, 32(5), 503–516.

[34] Saroj, P., & J.H. Greenhaus (2002). "Toward Reducing Some Critical Gaps in Work–Family Research." *Human Resource Management Review* 12 (3): 299–312.

[35] Savić, D. (2020). COVID-19 and work from home: Digital transformation of the workforce. *Grey Journal* (*TGJ*), 16(2), 101–104.

[36] Shagvaliyeva, S., & Yazdanifard, R. (2014). Impact of flexible working hours on work-life balance. *American Journal of Industrial and Business Management*, 2014.

[37] Shirmohammadi, M., Au, W. C., & Beigi, M. (2022). Remote work and work-life balance: Lessons learned from the Covid-19 pandemic and suggestions for HRD practitioners. *Human Resource Development International*, 25(2), 163–181.

[38] Shockley, K.M., & T.D. Allen (2010). "Investigating the Missing Link in Flexible Work Arrangement Utilization: An Individual Difference Perspective." *Journal of Vocational Behavior* 76 (1): 131–142.

[39] Shockley, K.M., & T.D. Allen (2012). "Motives for Flexible Work Arrangement Use." *Community, Work & Family* 15 (2): 217–231.

[40] Voydanoff, P. (2005). Toward a conceptualization of perceived work-family fit and balance: A demands and resources approach. *Journal of Marriage and Family*, 67(4), 822–836.

[41] Vyas, L. (2022). "New normal" at work in a post-COVID world: work–life balance and labor markets. *Policy and Society*, 41(1), 155–167.

[42] Wong, M.M.L., Lau, K.H., & Chan, C.W.F. (2021). The impacts and success factors of a work-from-home service-learning internship during COVID-19. *Journal of Work-Applied Management*, 13(2), 284–301.

[43] Yang, L., Holtz, D., Jaffe, S., Suri, S., Sinha, S., Weston, J., ... & Teevan, J. (2022). The effects of remote work on collaboration among information workers. *Nature human behaviour*, 6(1), 43-54.

Challenges and Opportunities of Work From Home: An Analytical Study

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Abstract

Working from home (WFH) has become the new norm in many countries and companies. There is a growing trend around the globe for having more people working from home, particularly in the current COVID-19 pandemic. This Research paper examines remote work, its advantages and disadvantages, attitudes towards telecommuting, and work-life balance. It reports on a work-from-home experiment at Ctrip, a Chinese travel agency, and work from home impact on Australian employees. The study also examines remote work's suitability in Indian work environments and its impact on individual and team performance. It also examines the benefits and disadvantages of remote work during the Covid-19 pandemic, focusing on flexible working, work-family conflict, and perceived stress. The paper also examines the efficiency of performance in the IT industry and its impact on personal and organizational performance and productivity.

It also discusses the challenges faced by employees during the COVID-19 quarantine and the role of work-from-home in sustaining businesses after the outbreak. The paper also investigates the effect of agile work characteristics on work-from-home success and the mediating effect of HRM support measures.

***Research Methodology:** The paper is secondary data based. We have analysed 33 papers. This research analyses include year in which, population summary, what is measured and findings. The study findings can give researchers and practitioners insights into the current position of challenges and opportunities.*

***Research limitation:** The paper is limited to a literature review that may need further research by using a framework to investigate challenges and opportunities of work from home. Paper type: This is a research paper.*

***Keywords:** Work Life Balance, Remote Work, Work from Home, Challenges and Opportunities.*

INTRODUCTION

Olson (1989) It reports on two studies, a quasi-experimental field study and an attitude survey. The author suggests that performing additional unpaid work in the home after regular work hours may be an important trend that merits further investigation. **(Felstead et al., 2002)** The paper finds that the option to work at home is more likely to be available in the public sector, large establishments, and work environments in which individuals are responsible for the quality of their own output. **(A. Dockery & Sherry Bawa, n.d.)** It finds that while employees

see it as a positive job attribute, it is also associated with long hours of work and can facilitate greater intrusion into non-work domains of life. **(Bathini & Kandathil, 2015)** It argues that instead of focusing on employee benefits, corporations and policy makers should consider employee cost also. **(Rafalski & Andrade, 2015**) The main advantage is the flexibility of hours and the main disadvantage is the lack of socialization. **(Nicholas Bloom et al., n.d.)** It found that home working led to a 13% performance increase, of which 9% was from working more minutes per shift and 4% from more calls per minute. Home workers also reported improved work satisfaction, and their attrition rate halved, but their promotion rate conditional on performance fell. **(Kriti Srivastava et al., n.d.)** It uses primary data from a survey of 50 IT sector employees in Pune and secondary data from research papers, case studies, articles, newspapers, and magazines. **(Dr. Kannamani Ramasamy, n.d.)** It also includes the opinions shared by the employees and managers which illustrate the present scenarios of Work- from -home in the IT industry and its possible solutions to overcome the difficulties. **(van der Lippe & Lippényi, 2020)** It finds that co-workers working from home negatively impact employee performance and team performance is worse when more co-workers are working from home. **(Adams-Prassl et al., 2022)** It finds that the share of tasks that can be done from home varies considerably both across as well as within occupations and industries. **(Restrepo & Zeballos, 2020)** It finds that those who worked from home spent less time working and on personal care, but more time on leisure, sleeping, and on food production and consumption. **(Nur Afiqah Akmal Abdullah et al., n.d.)** Findings revealed that a majority of the respondents agreed that working from home has more advantages than the disadvantages. **(Al-Habaibeh et al., 2021)** It outlines a survey conducted amongst people working from home to identify the challenges and opportunities this change in workstyle offers. **(Anand N. et.al, n.d.)** It discusses how work from home can be a boon or a curse for employees in the phase of pandemic. **(Darouei & Pluut, 2021)** It finds that employees who work from home experience less time pressure and work-family conflict. **(Natalie Pennington et al., n.d.)** Results suggested that increased use of work-related video chat and text messaging were related to greater stress levels. **(K. Vijay & S. Sreejith, n.d.)** The study concludes that manager perceptions are generally true about work from home practices except for work life balance and security measures. **(Norma Parulian Saragi Napitu et al., n.d.)** Inhibiting factors in implementing WFH are the unavailability of facilities and infrastructure such as laptops / computers, printers and internet data packages, interference from family members, procrastinating work, prioritizing work at home compared to office work. **(Daiji Kawaguchi & Hiroyuki Motegi, n.d.)** It finds that the opportunity to work remotely was more likely to be available to those engaged in non-routine tasks as well as to workers subject to HRM practices presupposing that worker performance is measurable. **(Prodanova &**. **(J. Prodanova & L. Kocarev, n.d**.) It uses partial least squares–structural equation modelling (PLS-SEM) methodology to analyze the data. The results reveal the possibility for reconciliation and the adequate remote work's flow as motivating, and the interruptions and technology-related anxiety as interfering impacts, in the process of achieving functional home office. **(Kooli, 2022)** t uses semi-structured interviews and finds

that the most of the challenges are associated with spillover from work, affecting family time, and invading personal space. **(T. Vold et al., n.d.)** It argues that companies need to not only see technology and digitalization as "hard core" skills, but that the digital and technological are woven into other aspects of organizational life. **(Tautz et al., 2022)** It finds that participants reported a lack of social presence, limited informal chats, communication difficulties and lack of mutual trust. **(Hackney et al., 2022**) It finds that work-from-home can have positive impacts on productivity and performance, but when work-from-home becomes mandatory and full-time, or external factors (i.e., COVID-19 pandemic) are at play, the overall impacts are less positive and can be detrimental to productivity and performance. **(Heidt et al., 2022**) It finds that agile work characteristics have a direct, positive and significant effect on the success of working from home and that part of the effect is explained by HRM measures as a mediator. **(K. Jacobs, 2022)** It provides insights into how working from home can be successful and sets up the broader context of the WFH modality. **(Steevan D. Souza N. & C., n.d.)** It also discusses the more fundamental effects of WFH, such as those on productivity and the elements that influence whether WFH is more or less productive than working from the office (WFO).

OBJECTIVE OF THE STUDY

1. To review the existing research literature on challenges and opportunities of work from home.
2. To explore the challenges and opportunities of work from home.

RESEARCH METHODOLOGY

The research paper is based on secondary data which is taken from various journals. The paper is secondary data based. We have analysed 33 papers.

FINDINGS

Table 1: Opportunities and Challenges Posed by Work from Home – An Overview of 40 Research Studies

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Olson, 1983)	The employees working at home.	This paper examines some behavioural, organizational, and social issues surrounding remote work, particularly work at home.	An exploratory study was conducted of 32 organizational employees who were working at home. The study found that the individuals who worked at home successfully were highly self-motivated and self-disciplined and had skills which provided them with bargaining power.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Pratt, 1984)	No participants	This paper discusses the advantages and disadvantages of home teleworking from the perspective of both the employer and the employee.	• Home teleworking offers advantages to both employers and employees, such as access to an expanded labour supply, increased productivity, flexibility, cost and time savings, and job opportunities for the home-bound. • Home teleworkers can be classified into distinct groups, such as self-disciplined full-time clerical women, managerial and professional mothers, and male managers or professionals. • Data suggest an evolution toward increasing home telework as new work patterns slowly develop in response to technological change.
(Olson, 1989)	17 computer professionals, members of the control group, and their supervisors	This paper discusses attitudes towards telecommuting, or working from home with computer and communications technology.	• Results of the field study showed that working in the home had little impact on employee performance, but supervisors preferred employees to be on site. • The survey showed that work in the home was related to lower job satisfaction, lower organizational commitment, and higher role conflict. • Working additional unpaid work in the home after regular work hours may be an important trend that merits further investigation.
(Felstead et al., 2002)	Workplace Employee Relations Survey	This paper looks at the concept of work-life balance and how it relates to the option of working at home.	• Working at home is often included in discussions of work-life balance and family-friendly employment, but these terms are often left ill-defined. • Working at home is more likely to be available in the public sector, large establishments, and work environments in which individuals are responsible for the quality of their own output. • These workplaces are typically less unionised but not especially feminised.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Nicholas Bloom et al., n.d.)	The treatment group and control group are both call center representatives from China.	This paper reports the results of a work from home experiment at CTrip, a Chinese travel agency.	• Working from home led to a 13% performance increase, with 9% from working more minutes per shift and 4% from more calls per minute. • Home workers reported improved work satisfaction and experienced less turnover. • The gains from WFH almost doubled to 22% when employees were allowed to re-select between the home or office.
(A. Dockery & Sherry Bawa, n.d.)	Australian employees in Australia	This paper looks at the impact of working from home on employees in Australia.	• Around 17% of Australian employees work some of their usual working hours from home. • Working from home is seen by employees as a positive job attribute that provides flexibility to balance work and non-work commitments. • Working from home is associated with long hours of work and the potential for greater intrusion into non-work domains of life.
(Bathini & Kandathil, 2015)	No participants	This paper discusses the benefits and costs of work from home.	• Work from home is increasingly being portrayed as a boon to employees, particularly female employees, in India. • However, there is evidence that work from home involves significant employee costs, depending on how it is framed and implemented. • Corporations and policy makers should consider employee cost when implementing work from home policies.
(Rafalski & Andrade, 2015)	74 workers who work from home for companies or as independent contractors	This paper explores the advantages and disadvantages of working from home.	• 62 participants reported working from home-office at the time of the research. • Flexibility of hours was the main advantage of this model of work. • Lack of socialization was the most recurrent disadvantage.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Kriti Srivastava et al., n.d.)	It uses primary data from a survey of 50 IT sector employees in Pune	This paper explores the concept of working from home and analyses its suitability in the Indian work environment.	• The majority of the surveyed employees in the IT sector of Pune have a positive attitude towards the concept of WFH. • WFH has the potential to reduce costs, increase productivity, and improve work-life balance. • There are certain challenges associated with WFH such as lack of face-to-face communication, difficulty in monitoring performance, and security concerns.
(Dr. Kannamani Ramasamy, n.d.)	employees and managers from 9 IT organizations	This paper discusses the nature, benefits, necessity and drawbacks of Work-from- home concept from the perspective of both employers and employees. .	• Work-from-home is becoming increasingly popular in the IT industry and is slowly gaining traction in other sectors. • Benefits of Work-from-home include increased productivity, improved work-life balance, and cost savings for employers. • Drawbacks of Work-from-home include lack of face-to-face communication, difficulty in monitoring employee performance, and potential security risks.
(van der Lippe & Lippényi, 2020)	11,011 employees in 9 European countries	This paper uses data from a large European survey to study the impact of co-workers working from home on individual and team performance.	• Working from home by co-workers has a considerable impact on individual and team performance. • Working from home by co-workers negatively impacts employee performance. • Team performance is worse when more co-workers are working from home.
(Adams-Prassl et al., 2022)	workers in the US and UK	This paper uses surveys from the US and UK to study the variation in the percentage of tasks workers can do from home.	• The share of tasks that can be done from home varies significantly across and within occupations and industries. • The share of workers who can do all tasks from home has increased most in those occupations in which the pre-existing share was already high. • Women can do fewer tasks from home than men, even within occupations and industries.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Restrepo & Zeballos, 2020)	2441 prime working age adults have a white-collar occupation.	This paper uses the American Time Use Survey to study the differences in time spent in major activities between individuals who worked from home and away from home.	• Working from home allows for more time to produce food and consume food at home. • Individuals who worked from home spent less time working and on personal care, but more time on leisure, sleeping, and on food production and consumption than those who worked away from home. • Home-produced meals tend to be lower in calories and higher in nutrients than meals prepared away from home.
(Nur Afiqah Akmal Abdullah et al., n.d.)	100 employees in South Africa aged 18 to 30 years old	This study investigates the advantages and disadvantages of working from home from the employees' perspectives.	• Working from home has more advantages than disadvantages from the employees' perspectives. • The advantages of working from home include increased family values, increased performance, and improved work-life balance. • Isolation was the only disadvantage of working from home identified by the respondents.
(Al-Habaibeh et al., 2021)	people working from home	This paper discusses the challenges and opportunities of remotely working from home during Covid-19 pandemic.	• Employees rapidly adapted to using online tools and combining their working hours with daily routines and family commitments. • Eliminating travelling time when working remotely from home has a positive impact on the environment and CO_2 emissions. • Lack of face-to-face discussion and informal meetings during working days is a drawback.
(Anand.N. et.al, n.d.)	Asia	This descriptive study focuses on the pros and cons of flexible working, specifically work from home.	• Work from home has emerged as the "new normal strategy" after the pandemic. • Flexible working arrangements such as work from home enable employees to avoid daily commutes and work according to their convenience. • The IOT (Internet of Things) has become essential for organizations to pace up the work.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Darouei & Pluut, 2021)	34 professional workers in Netherlands aged 25 to 58, mostly female	This paper investigates how working from home influences employees' work-family conflict and well-being.	• Working from home reduces time pressure and work-family conflict on the same day. • Experiences of work-family conflict predict next morning engagement and exhaustion levels and affective states towards the organization. • Organizations should encourage a work-from-home protocol to protect employee well-being.
(Natalie Pennington et al., n.d.)	540 adult Americans in United States of America	This paper explores how individuals who worked from home during the COVID-19 pandemic used information communication technologies and the relationship use had with perceived stress.	• Increased use of work-related video chat and text messaging were related to greater stress levels. • Women with multiple children experienced greater stress while working remotely. • ICTs can have a negative impact on stress levels for those working from home during the COVID-19 pandemic.
(K. Vijay & S. Sreejith, n.d.)	All of the managers in the IT industry	This study investigates the perceptions of managers in the IT industry about working from home. It uses factor analysis and different statistical tests over primary sources of data.	• Most managers in the IT industry have a positive perception of work from home practices. • Working from home can help employers to save costs and yield better results. • Managers generally have a true perception of work from home practices, except for work life balance and security measures.
(Norma Parulian Saragi Napitu et al., n.d.)	State Civil Apparatus in the Work from Home system	This paper discusses the efficiency of performance and the factors inhibiting the efficiency of the performance of the State Civil Apparatus in the Work from Home system..	• Cost of office expenses reduced by 40% each month due to WFH. • Inhibiting factors in implementing WFH include unavailability of facilities and infrastructure, interference from family members, procrastinating work, and prioritizing work at home. • Employees should create a special room, list of jobs, time limits, and communicate regularly with superiors to maximize efficiency during WFH.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Daiji Kawaguchi & Hiroyuki Motegi, n.d.)	Workers in Japan	This paper examines the characteristics of remote work using a unique Japanese survey dataset.	• The opportunity to work remotely was more likely to be available to those engaged in non-routine tasks. • The opportunity to work remotely was also more likely to be available to workers subject to HRM practices presupposing that worker performance is measurable. • The findings of this paper have implications for income transfer policies and management practices in light of the COVID-19 pandemic.
(Prodanova & Kocarev, 2021)	363 employees	This study investigates the factors that would determine job performance when working from home.	• Job performance is conditioned by work-from-home demands and resources. • ICT anxiety and smartphone addiction can inhibit work progress and reduce efficacy, affecting performance. • Companies must simplify the transition to the home office, providing employees with job management and tools to ensure uninterrupted and productive working processes.
(S. Seethalakshmi, n.d.)	103 IT employees	The study intends to identify Factors influencing their perception and the Challenges faced by them during work from home.	• Work from home has not affected the productivity of IT employees in most cases. • Factors influencing IT employees' perception of work from home include flexible working, reduced travel, home atmosphere, and less pollution. • Challenges faced by IT employees during work from home include lack of social interaction, difficulty in maintaining work-life balance, and technical issues.
(J. Prodanova & L. Kocarev, n.d.)	363 remote work employees	This study investigates employees' experiences of working from home during COVID-19 quarantine.	• Remote work tasks and environment highly determine employees' productivity and satisfaction. • Interruptions and technology-related anxiety interfere with achieving a functional home office.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
			• Satisfaction is found to be crucial for employees' future intentions to continue working remotely after the COVID-19 pandemic is over.
(Ugemuge et al., 2022)	Not applicable	This paper discusses the benefits, drawbacks, opportunities, and challenges of working from home. It provides recommendations for how to best support a pleasant work from home experience.	• Working from home has both benefits and drawbacks, and it is important to be aware of these when considering the option. • Establishing a routine, being organized, having a sufficient workspace, boosting productivity, being responsible, avoiding multitasking, enhancing communication and networking, being balanced, studying remote research possibilities, and learning from issues are all important for a successful work from home experience. • It is important to consider the physical, mental, and emotional health and well-being of workers when working from home.
(Kooli, 2022)	16 women actively employed in different sectors in the UAE economy	This study explores the experiences of working from home among women in the United Arab Emirates during the lockdown.	• Women working remotely faced issues linked to glitches, malfunctions, and knowledge deficiencies. • Advantages of working from home include workplace flexibility and control, as well as the opportunity to work from the comfort of the home. • Mixed feelings to continue working from home and its impact on the career progression of women in the UAE.
(T. Vold et al., n.d.)	6 newcomers recruited and onboarded during the pandemic with neck, shoulder, and back problems	This paper discusses the challenges employees face when working from home.	• New employees recruited during the COVID-19 pandemic can find life in the home office quite challenging. • Digital and technological solutions must be woven into other aspects of organizational life, such as structures, culture and social

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
			interaction, to ensure new employees feel valued and connected to the company. • Relational development and maintenance are essential for new employees to function in both the digital and physical spheres.
(P. Gupta & P. Gandhi, 2022)	5,000 workers in the US.	This paper examines the concept of work from home and its role in sustaining businesses after the Covid-19 outbreak.	• Remote working enabled many businesses to survive the Covid-19 pandemic, particularly those in the banking, finance, real estate, and IT industries. • Many organisations have provided their staff with the necessary tools to work from home comfortably. • Many companies have made the decision to work from home permanently.
(Tautz et al., 2022)	41 women and men aged between 20 and 62 years in Germany, 23 leaders and 18 employees	This paper investigates the concrete challenges regarding the feasibility of transformational leadership and health-oriented leadership in a remote setting.	• Working from home has consequences for transformational and health-oriented leadership. • Participants reported a lack of social presence, limited informal chats, communication difficulties and lack of mutual trust. • Practical implications for leaders and HR practitioners are derived from the findings.
(Hackney et al., 2022)	People from various industries academia, tele-communications, government, finance, insurance, IT/ software, tax, and accounting	This paper systematically reviews the impact of work-from-home arrangements on personal and organizational performance and productivity.	• Work-from-home arrangements can have positive impacts on productivity and performance when non-mandatory. • When work-from-home becomes mandatory and full-time, or external factors (i.e., COVID-19 pandemic) are at play, the overall impacts are less positive and can be detrimental to productivity and performance. • Results can help inform the development of organizational strategies to create an effective, resilient, and inclusive work-from-home workplace.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Heidt et al., 2022)	1,016 employees working from home during the COVID-19 crisis	This paper investigates the effect of agile work characteristics on work from home success and the mediating effect of tailored support measures by HRM.	• Agile work characteristics have a direct, positive and significant effect on the success of working from home. • HRM measures act as a mediator, accounting for 48% of the total effect. • The research model provides companies with information on how to best support employees in the dynamics of a crisis and the expansion of work from home.
(K. Jacobs, 2022)	Not academicians	This paper discusses the unique opportunities and challenges of working from home.	• Working from home (WFH) has become widely prevalent in many industries due to the COVID-19 pandemic, and has offered unique opportunities for certain occupations. • WFH has impacted the visual strain of workers, relating to the lighting conditions, and has been found to have lasting impact on the health and well-being of the workers. • A systems approach will likely need to be utilized as workers will be in complex environments, potentially impacting worker well-being, stress, and burnout.
(Steevan D. Souza N. - & C. -, n.d.)	IT employees in Mangalore City	This essay looks at the experience of working from home and how it can promote work-life balance.	• Working from home (WFH) has the potential to promote work-life balance, provide more flexible working hours, and reduce commute time compared to working from the office (WFO). • The effects of WFH on productivity and the factors that influence whether WFH is more or less productive than WFO are still not well understood. • The Covid-19 pandemic has accelerated the trend of WFH, with many people having to temporarily convert to WFH.

Citation	*Sample*	*Scope of Study*	*Challenges and Opportunities during WFH*
(Gibbs et al., 2021)	over 10,000 skilled professionals at an Indian technology company in India.	This paper uses personnel and analytics data from over 10,000 skilled professionals at an Indian technology company to study employee productivity before and during the working-from-home period of the COVID-19 pandemic.	• Hours worked increased, output declined slightly, and productivity fell 8%–19%. • Communication costs increased, with more time spent on coordination activities and meetings, and fewer uninterrupted work hours. • Employees networked with fewer individuals and business units inside and outside the firm and had fewer one-to-one meetings with supervisors.

ANALYSIS OF RESULT

Opportunities of WFH	*Challenges of WFH*
Work Productivity	Fear of job less
Remote Flexibility	Long working hours
Organised And Routine work	Lack of communication with co-workers
Work Performance	Job insecurity
More time for family members	Work distractions
Flexibility in working Hours	Increased Responsibility/blur line between home and work
Autonomy	Decrease Productivity

RECOMMENDATIONS

There is a need for a hybrid model in which some employees work from home and others used to work from the office after taking into account the many opportunities and benefits of work from home (WFH). Many big companies, including Google, Amazon, Starbucks, TCS, and many others, have embraced a hybrid model of work culture, which not only increased employee productivity but also aids in maintaining work-life balance (WLB) with the added benefit of greater flexibility and control when working from home. Many workers are open to working entirely or in part from home. Thus, in order to address the changing demands of the business and uncertainties, we advise developing future work policies pertaining to the hybrid model of work practises.

CONCLUSION

This review highlights the challenges and opportunities of working from home during the COVID-19 pandemic. While some organizations experienced increased productivity and

well-being, others faced challenges such as technology overload, lack of skills, screen fatigue, and diminishing work boundaries. Employee stress and well-being were major concerns for organizations, with married counterparts experiencing more challenges. The diminishing work boundaries led to marital conflicts and social and technological interventions.

At the individual level, employees benefitted from the time and money saved from commuting, but increased workload, job insecurity, social isolation, and lack of communication were major concerns. The study suggests that both employees and organizations need to align to improve the situation. Organizations should understand the importance of work-life balance and restrict working beyond a stipulated time to ensure employee wellbeing. Employees can organize their time and communicate with their boss and team about the challenges faced while working from home. Families and co-workers' can also play a constructive role in helping and supporting employees overcome these challenges.

REFERENCES

[1] A. Dockery, & Sherry Bawa (n.d.). Is Working from Home Good Work or Bad Work? *Evidence from Australian Employees*.

[2] Adams-Prassl, A., Boneva, T., Golin, M., & Rauh, C. (2022). Work that can be done from home: evidence on variation within and across occupations and industries. In *Labour Economics* (Vol. 74). https://doi.org/10.1016/j.labeco.2021.102083

[3] Al-Habaibeh, A., Watkins, M., Waried, K., & Javareshk, M.B. (2021). Challenges and opportunities of remotely working from home during Covid-19 pandemic. In *Global Transitions* (Vol. 3, pp. 99–108). https://doi.org/10.1016/j.glt.2021.11.001

[4] Anand N. et al. (n.d.). Work from home: A boon in the phase of pandemic?

[5] Bathini, D.R., & Kandathil, G. (2015). Work from Home: A Boon or a Bane? The Missing Piece of Employee Cost. In *Indian Journal of Industrial Relations* (Vol. 50, Issue 4, pp. 568–574).

[6] Daiji Kawaguchi, & Hiroyuki Motegi (n.d.). Who Can Work from Home? The Roles of Job Tasks and HRM Practices.

[7] Felstead, A., Jewson, N., Phizacklea, A., & Walters, S. (2002). Opportunities to work at home in the context of work-life balance. In *Human Resource Management Journal* (Vol. 12, Issue 1, pp. 54–76). https://doi.org/10.1111/j.1748-8583.2002.tb00057.x

[8] Hackney, A., Yung, M., Somasundram, K.G., Nowrouzi-Kia, B., Oakman, J., & Yazdani, A. (2022). Working in the digital economy: A systematic review of the impact of work from home arrangements on personal and organizational performance and productivity. In *PLoS ONE* (Vol. 17, Issue 10 October). https://doi.org/10.1371/journal.pone.0274728

[9] Heidt, L., Gauger, F., & Pfnür, A. (2022). Work from Home Success: Agile work characteristics and the Mediating Effect of supportive HRM. In *Review of Managerial Science*. https://doi.org/10.1007/s11846-022-00545-5

[10] J. Prodanova, & L. Kocarev (n.d.). Employees' dedication to working from home in times of COVID-19 crisis.

[11] K. Jacobs (n.d.). Special issue: Working from home.

[12] K. Vijay, & S. Sreejith (n.d.). A Study on Work from Home Practices among Managers in IT Industry.

[13] Kannamani Ramasamy (n.d.). Introspection of Work-From-Home in IT Industry.

[14] Kooli, C. (2022). Challenges of working from home during the COVID-19 pandemic for women in the UAE. In *Journal of Public Affairs*. https://doi.org/10.1002/pa.2829

[15] Kriti Srivastava, Amritha Sethumadhavan, H. Raghupathy, Shreya Agarwal, & S. Rawat (n.d.). To Study the Indian Perspective on the Concept of Work from Home.

[16] Maral Darouei, & H. Pluut (n.d.). Work from home today for a better tomorrow! How working from home influences workfamily conflict and employees' start of the next workday.

[17] Natalie Pennington, Amanda J. Holmstrom, & Jeffrey A. Hall (n.d.). The Toll of Technology while Working from Home during COVID-19.

[18] Nicholas Bloom, James Liang, John Roberts, & Zhichun Jenny Ying (n.d.). Does Working from Home Work? Evidence from a Chinese Experiment.

[19] Norma Parulian Saragi Napitu, Humaizi Humaizi, & Budi Hartono (n.d.). Efisiensi Kinerja Aparatur Sipil Negara dalam Sistem Work from Home.

[20] Nur Afiqah Akmal Abdullah, Noor Hanim Rahmat, Fatin Zafirah Zawawi, Muhammad Adib Nazhan Khamsah, & Afiqah Humaira Anuarsham (n.d.). Coping with Post Covid-19: Can Work From Home Be a New Norm?

[21] Olson, M.H. (1983). Remote office work: Changing work patterns in space and time. In *Communications of the ACM* (Vol. 26, Issue 3, pp. 182–187). https://doi.org/10.1145/358061.358068

[22] Olson, M.H. (1989). Work at Home for Computer Professionals: Current Attitudes and Future Prospects. In *ACM Transactions on Information Systems* (*TOIS*) (Vol. 7, Issue 4, pp. 317–338). https://doi.org/10.1145/76158.76891

[23] P Gupta, & P. Gandhi (n.d.). A study to examine work from home as panacea for industries in the midst of the Covid-19 outbreak.

[24] Pratt, J.H. (1984). Home teleworking: A study of its pioneers. In *Technological Forecasting and Social Change* (Vol. 25, Issue 1, pp. 1–14). https://doi.org/10.1016/0040-1625(84)90076-3

[25] Prodanova, J., & Kocarev, L. (2021). Is job performance conditioned by work-from-home demands and resources? In *Technology in Society* (Vol. 66). https://doi.org/10.1016/j.techsoc.2021.101672

[26] Rafalski, J.C., & Andrade, A.L. (2015). Home-office: Aspectos exploratórios do trabalho a partir de casa. In *Temas em Psicologia* (Vol. 23, Issue 2, pp. 431–441). https://doi.org/10.9788/tp2015.2-14

[27] Restrepo, B.J., & Zeballos, E. (2020). The effect of working from home on major time allocations with a focus on food-related activities. In *Review of Economics of the Household* (Vol. 18, Issue 4, pp. 1165–1187). https://doi.org/10.1007/s11150-020-09497-9

[28] S. Seethalakshmi (n.d.). Work from Home at IT Companies – The New Normal.

[29] Steevan D. Souza N. -, & C. -. (n.d.). Work-life Balance among Work from Home Employees: A Study with Reference to it Companies of Mangalore City.

[30] T. Vold, H. Haave, & Ole Jorgen S. Ranglund (n.d.). I miss my Office in my home Office: Challenges with work from home.

[31] Tautz, D.C., Schübbe, K., & Felfe, J. (2022). Working from home and its challenges for transformational and health-oriented leadership. In *Frontiers in Psychology* (Vol. 13). https://doi.org/10.3389/fpsyg.2022.1017316

[32] Ugemuge, P., Shingankar, S., & Joshi, S. (2022). Work from home – A growing trend in IT companies benefits, drawbacks, opportunities, and challenges. In *Journal of Datta Meghe Institute of Medical Sciences University* (Vol. 17, Issue 4, pp. 1009–1012). https://doi.org/10.4103/jdmimsu.jdmimsu_456_21

[33] van der Lippe, T., & Lippényi, Z. (2020). Co-workers working from home and individual and team performance. In *New Technology, Work and Employment* (Vol. 35, Issue 1, pp. 60–79). https://doi.org/10.1111/ntwe.12153

Moonlighting in India: New Version of Work Model

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Abstract

This Paper examines the theoretical notion of moonlighting and the purpose behind it. According to studies, moonlighting happens for financial reasons, such as better pay packages, good incomes, big bucks, etc. To better understand this phenomenon among employees based in Hyderabad, a focus group discussion with employees of some companies was held. It is viewed as a strategy for avoiding the unknown future, a means to seize the chances that are out there for networking, capacity enhancement, improved performance, and enrichment. In addition to this, it shortens the amount of time spent spending quality time with the family and raises the danger of burnout. The role of the workforce and their quality of life are both impacted by this study.

Keywords: *Dual Employment, Full Moonlighting, Financial Security, Work culture, Quality of life .Monitory enhancement*

INTRODUCTION

The most valuable resource for every firm is its human capital. Employees take on many jobs to augment their income and get work security as a result of the different economic shifts and insecure employment conditions. It's known as moonlighting. Both employers and employees face difficulties and moral dilemmas as a result. The management of the firm faces a difficulty in attracting and keeping human resources as the economy expands and becomes more competitive on a worldwide scale.

Although the term "moonlighting" has many different connotations, it mostly refers to working a job covertly, usually at night. The act of taking a second job without informing your present employer is sometimes referred to as it. Working a side job after regular working hours is referred to as moonlighting. You can work a full-time employment, a part-time contract, or freelance work in addition to other side jobs. When a person's primary employment is merely intended to provide revenue so they may pursue a side career of their choosing, it is generally referred to as a "day job." Holding a second job in addition to one's primary position, often known as moonlighting, is a common practice that can vary from blue moonlighting to full moonlighting.

People are looking for alternative strategies to ensure employment security and a continuous and higher income stream due to some fluctuations in the job market brought on by the rapid advancement of technology and the requirement of continuous skill upkeep. These factors have been observed to reduce employee-employer loyalty, increase the risk of unemployment, and shorten job tenures. Many workers have had to devise an active strategy of working numerous jobs or moonlighting to cope with the aforementioned instability. While Swiggy introduced a moonlighting policy that permits its staff to work on side projects that are personally meaningful to them (driving the company closer to being a "remote-first organisation"). The idea of working two jobs while in the computer business was referred to as cheating by Wipro's chairman, Rishad Premji.

REVIEW OF LITERATURE

Moonlighting, also known as multitasking is the practice of people working on more than one job at a time. Part-time employment is a common practice in India, especially in the unorganized sector. This article aims to explore the reasons for part-time work in India, its implications and possible policy implications. The study is based on an analysis of previous research and data sources.

Nunoo, Darfor, Koomson, and Arthur (2016) outlined how job security affects employees' willingness to work additional jobs in Ghana. They claimed that fewer individuals moonlighting as a result of higher job security for those who only hold one job. However, those who worked two or more jobs had a higher degree and more frequent moonlighting behaviour.

Moonlighting, according to Husain (2014), is "having a second job, either full-time or part-time in nature, in addition to a primary full-time job." The job could or might not be similar to the prior one. It could be either transitory or ongoing.

Sangwan (2014) the authors mentioned that moonlighting refers specifically to a professor (full time teaching position) teaching concurrently in more than one university. He conducted the study on professor at Christian university, despite his or her highest academic degree or ranking.

Banerjee (2012) described Moonlighting is an employee's tendency to work with two different companies at the same time. To work in both the companies, they divide their work on the basis of day and night.

Patricia Lotich (2010) explained there are many advantages and disadvantages of employee moonlighting for both the employee and the employer. Because of it distresses the performance of organization, employers need to prevent employee moonlighting. Due to moonlighting the number of employee sick leaves taken increases and also starts stealing confidential information.

Betts (2006) classifies them into economical approaches and dispositional approaches. Economic view point considers moonlighting mainly as a source of income. Dispositional approaches propose that there is more likeliness to moonlighting than financial necessity. The first dispositional framework was the theory of deprivation. Moonlighters are considered

economically and socially deprived. The second dispositional framework is the aspiration theory. Moonlighters are considered as special people with higher aspirations and more energy.

It is a more positive view compared to the deprivation theory. Betts argues that it led to more support than the deprivation theory.

OBJECTIVES OF STUDY

- To understand the concept of moonlighting
- To analyze various Branches of moonlighting
- To understand key driver of moonlighting
- To examine the challenges of moonlighting
- To suggest certain measures for companies to manage challenges of moonlighting.

RESEARCH METHODOLOGY

This article will discuss many forms of employee moonlighting. The information used to perform this study has been gathered from secondary sources, including books, publications, the Internet, and journal articles.

CONCEPT OF MOONLIGHTING

Moonlighting, as defined by the Cambridge Dictionary, is the practice of working a second job without alerting your primary employment. Moonlighting is the practice of doing a second job outside of regular business hours, typically without the employer's knowledge. It was referred known as moonlighting since the side employment was typically performed at night or on the weekends. The phrase became well-known when Americans began looking for second jobs in addition to their normal 9-to-5 jobs to supplement their income.
Other terms for moonlighting include "side jobs" and "dual employment."

The term "Moonlighter" refers to a person who takes up a second job at night and works by the light of the moon, from whence the term moonlight was derived. This was employed in 1882 by a group of men who engaged in organised nighttime robberies and killings in Ireland as part of agrarian outrages. In American English, the term "moonlighter" referred to someone who performed throughout the evenings. Workers who consider their spending demands and goals to be significantly greater than the financial benefits of their primary occupations are known as moonlighters. The amount of unpaid time is a good indicator of how much moonlighting will be done in a given workplace.

Changes in job patterns have been noticed since the epidemic, which rocked the world in 2020, started. With less employment, higher costs, and little demand, thriving industries with exciting workplaces experienced jerks. Dual employment or moonlighting is a novel phenomenon that has become more common during the post-pandemic era.

Because of their employment worries or concerns about the future of their profession, some people who moonlight work in various industries between their primary and secondary occupations. The major subjects of debate are the moral and legal implications of moonlighting.

Moonlighting may be seen as both a permanent and passing phenomena. When moonlighting frequently, the secondary employment almost never replaces the primary one.

The idea of "Moonlighting" is becoming more and more common in commercial organizations. Employees moonlight for a variety of reasons, such as acquiring expertise in a new industry, pursuing a passion, finding job satisfaction that may be lacking in their regular position, ensuring employment stability, or for financial gain. While some businesses have been accommodating and allowed moonlighting under specified conditions, others have clamped down and fired employees who were found to be moonlighting. The pandemic-inspired new-age moonlighting has affected weekdays and established working hours as well; raising issues with data security, confidentiality, and potential income losses. Businesses nowadays are split. While some people view moonlighting as immoral, others see it as a necessary evil.

Employees who work second jobs raise a number of ethical concerns. Both employers and employees face difficulties as a result. Having a second job is not a novel concept. However, with the pandemic-caused rise in work-from-home, the practise of holding two jobs took on a new significance. Food delivery platforms Swiggy and Zomato have developed rules that permit dual employment for its employees at a time when businesses are dealing with high turnover and a need for more flexibility from employees. Contrarily, a number of tech firms, including Wipro, Infosys, and IBM, have rejected the concept and the participants.

According to Drucker, trying to prevent a body from rotting is both time-consuming and expensive, as well as pointless. Moonlighting reduction, cessation, and eradication initiatives by a select few Indian corporations are as fruitless as attempting to stop a body from smelling. It is comparable to the rising sun, which none can stop. It is time for Indian corporations to adopt new perspectives, create new systems and procedures, and integrate moonlighting into their very nature since it is a powerful instrument for fostering innovation and entrepreneurship.

Branches of Moonlighting

1. **Blue moonlight:** "Blue Moonlight" refers to ineffective freelance attempts. Juggling between two daily tasks is difficult for many people. Employees who find multitasking difficult may work part-time.
2. **Quarterly part-time jobs:** Not all side jobs may be full-time jobs. The possibility of part-time work exists. Part-time employment, or part-time work outside of your regular job, is common practice.
3. **Working at a second job** for a longer period of time than required for a part-time position is called part-time work. The term "half moon" is often used when an employee works part- time, occupying up to 50% of their free time.
4. **Full moonlighting:** Full Moonlight is the simultaneous management of two full-time occupations or professions. Some have even started their own business while keeping their current jobs.In some cases, a person's second job can even determine their social status.

Key Drivers of Moonlighting Work in India

1. **Work from home culture:** As companies can no longer use start/leave times to gauge employee productivity, working from home is becoming the new norm, which also encourages working time. Impact of COVID-19 When Covid-19 hit in 2020 and caused shutdowns, the economy began to shut down resulting in the layoff of thousands of workers. To maintain job security and a steady stream of income, it also leads to employees finding and/or accepting a lot of work, with up to 70% of remote workers taking on a second role.
2. **To have more money to spend:** If their main employment income is low and they need additional income to meet their needs, or if their main income may not be enough to to support their lavish lifestyle, workers can choose to pursue a second job.
3. **To gain additional work experience:** Workers may consider a second job to develop new skills or pursue a career that better matches their interests.
4. **Avoid boredom:** Employees may choose to work part-time to take advantage of available time off when they don't have enough work to do their main job or stay active throughout the day.

Recent Status of Moonlighing in India

In India, it's legal to hold many jobs without breaching the law. However, a person with a comparable set of employment might raise worries about a breach of confidence because many businesses often forbid employees from holding down more than one job in their employment agreements.

If an employee's contract stipulates non-compete and exclusive employment, as is the case with the majority of traditional employment contracts, moonlighting could be regarded as cheating. If the employment contracts do not contain this provision or offer exceptions, it is not considered cheating.



Recent Cases of Moonlighting in India

Reasons of Moonlighting from Employee Side

Employees will look for a secondary source of income to supplement their salary or will make an alternative plan in case they lose their job if they believe that their salary and other benefits are in jeopardy due to mass restructuring, layoffs, inadequate pay, or other corporate movements like mergers, acquisitions, etc.

If a person can convince their employer that whatever duties they have taken on outside of their principal position do not clash with one another. Additionally, provided they guarantee that the time spent on the other work will not in any way affect their performance at the other job, it is acceptable from the employee's point of view to pursue a second career.

(a) By allowing an employee to go from one job to another, moonlighting reduces their likelihood of ever becoming jobless.
(b) Employees that stick in the same industry are exposed to more people, which broadens their network, which is advantageous to both the person and the company.
(c) The employee's enhanced knowledge, experience, and skill set enable them to perform better, which benefits the employer.
(d) Employee turnover is less likely since those who regularly moonlight have better economic positions.

Problems of Moonlighting

There is a lot of discussion regarding people working second jobs in the IT sector. Simply said, this is cheating.

(a) **Moonlighting and ethical concerns:** Employers frequently disapprove of this practise since it may result in a worker not giving their organisation the time it requires and giving no extra time to either organisation. Employees are given days off and weekends to relax and increase their productivity, but if they take on another job, performance will inevitably decrease.
(b) **Moonlighting and legal issues:** Private businesses in India often forbid employees from holding multiple jobs. Double employment is prohibited under many state Shops and Establishment Acts, although the implementation varies, particularly for highly specialist businesses.
(c) **Moonlighting and mental health problems:** Since the Covid epidemic, there has been a dramatic increase in the tendency of working a second job due to decreased wages, lost jobs, and reduced income. Employees choose to work two jobs to get more money. According to a study on extended work hours, those who work more than 11 hours per day are 2.5 times more likely than people who work regular hours to have sadness and sleep problems. Our mental health suffers some serious, detrimental effects from working two jobs.

Risk of Moonligting to Employer/Companies

There is a lot of talk about individuals moonlighting in the IT business, and Wipro Chairman Rishad Premji is very clear about his position on it. Simply said, this is cheating. A former director of Infosys disagrees, saying that employees are not allowed to work outside of normal business hours and that moonlighting is not cheating. It was described as "not rampant" by the MD of Tech Mahindra. That, after discussing specifics with the corporation, his outfit would

definitely "make a policy" allowing employees to publicly pursue numerous jobs at once. However, businesses like Swiggy have made their "moonlighting policy" — also known as "industry first"—public, allowing its staff to perform several jobs simultaneously under specific circumstances.

Different businesses have different perspectives on this issue. These firms warn workers who moonlight about a number of risk considerations, including:

1. **Conflict of interest:** Workers who moonlight may face conflicts of interest if they work for a competitor or provide confidential or sensitive information. If a person has a second job in a similar sector, they may have the opportunity to divulge trade secrets.
2. **Worked too hard employees and poor health:** Employees may perform poorly on the job if they overwork themselves. Employees who have two jobs frequently get overworked. Physical weariness and lengthy work hours may cause an individual to experience a number of health-related issues as a result of their excessive workload.
3. **A "double employment" limitation known as a "moonlighting clause"** has been implemented by several businesses. Although there are restrictions on multiple employment under the Factories Act, in certain places it is not legally enforceable and does not apply to IT businesses.
4. **Ethical concerns:** Data and confidentiality breaches, as well as productivity loss, are the main concerns that firms have with moonlighting. Employees may run into serious issues if they start exploiting the information from one company for the other. Employees must be aware of the need of protecting information that might be advantageous to a rival business. For the workers, moonlighting presents an ethical conundrum.
5. **Misuse of employer resources:** It is also unethical for employees to exploit the physical and intellectual resources provided by the company for their own ventures or other jobs. The employer could even think it's theft. Employers also do not like it when employees utilise work equipment, such as computers and software, for a side business.

When it comes to side jobs, the business world expresses its conflicting views. Some IT businesses view moonlighting as an outright infringement of the employment agreement between an employer and an employee, as well as a danger to the privacy and confidentiality of corporate data, which ultimately reduces the company's productivity. There is no general legislation that forbids someone from doing more than one job. A person with similar tasks, meanwhile, may raise concerns about confidentiality breaches.

Suggestions to Manage Moonlighting Effectively

Employers are growing more worried about employees doing second jobs. It presents the management with a variety of difficulties. Considering recent changes in the corporate sector throughout the world, it is now time for Indian corporations to adopt a new perspective and set of procedures that would make moonlighting a fundamental part of the workplace culture.

1. **Create an appropriate policy:** Managers should write appropriate legislation that tackles the problem of moonlighting in every industry in order to achieve this. The company's policies surrounding moonlighting must be included in the moonlighting policy.
2. **Avoid conflict of interest:** Where potential conflicts of interest exist, no employee should take on a second job as it will affect their performance at their primary job, abuse company resources, and lead to absenteeism, inattentiveness, or exhaustion. As a result, employers may discourage employees from working second jobs.
3. **Promote transparency and disclosure:** Governments can require individuals to disclose their secondary employment to their primary employer. This can help prevent conflicts of interest and ensure that moonlighting activities do not interfere with the individual's primary job responsibilities. Transparent disclosure processes can be established to maintain trust and accountability between employees and employers.
4. **The danger of losing corporate confidentiality** is decreased by employment contract clauses that prohibit workers from working for or engaging in commercial activities with direct competitors. Before looking for side employment or starting a business, employees should carefully evaluate their current contract with their principal employer to make sure they are in compliance with any moonlighting laws.
5. **Permission to take a second job:** Employees should examine their employment contract with their primary employer before accepting a second job. Before starting a second career or company, the employee needs the employer's permission. Both the employer and the employee will gain from this. The employee won't have to worry about being found out or feel guilty for hiding anything the financial need for moonlighting.
6. **Minimum wage revision:** The primary cause of people taking on second jobs is insufficient pay. Employers are required to make sure that workers get the minimal pay necessary to meet their basic necessities and vary according to performance. Employees will be far less likely to need to take on a second job if their financial demands are met by their current position.
7. **Workforce analytics tool:** Employers can keep an eye on where their remote workers are spending their time while they should be working for them by using solutions like Workforce Analytics. If a few of them start spending more time than you expected on their side projects, talk to them about it. Many firms are working to recognize and reduce risks associated with moonlighting, such data leaking and day lighting.

CONCLUSION

Since moonlighting is here to stay, it is necessary for businesses to clearly clarify what is and is not acceptable. In order to combat the impacts of moonlighting and maintain positive working relationships between employers and workers, appropriate procedures must be developed. Even while companies like Swiggy have created a policy permitting workers to moonlight in a role that does not present a conflict of interest and has no detrimental impact on productivity, it may herald a new age in employment. However, there is currently no

definite law against moonlighting in India that can be applied to all occupations. Therefore, whether moonlighting is lawful or criminal varies much on the employers and the terms of their employment working a second job is beneficial.

REFERENCES

[1] Akhileshwar, S. (2022). Bipolar Stroke|Stop the Dogfight against Moonlighting, We Can't Reverse the Future that Came Yesterday. Retrieved from https://www.news18.com/news/opinion/bipolar-stroke-stop-the-dogfight-against-moonlighting-we-cant-reverse-the-future-that-came-yesterday-6291193.html

[2] Banerjee, B. (2019). Causes and effects of part-time jobs in India: An exploratory study.

[3] https://bwpeople.businessworld.in/article/Moonlighting-What-Is-The-Best-Way-For-Organisations-To-Handle-This-Phenomenon-/17-01-2023-462131/

[4] https://ijirt.org/master/publishedpaper/IJIRT158651_PAPER.pdf

[5] https://sightsinplus.com/news/industry-news/moonlighting-gets-government-support/

[6] https://www.business-standard.com/content/specials/moonlighting-is-a-double-edged- sword-is-it-really-legal-in- Inde-122101100631_1.html

[7] https://www.drishtiias.com/loksabha-rajyasabha-discussions/perspective-moonlighting- culture

[8] https://www.iasparliament.com/current-affairs/daily-news/the-issue-of-moonlighting https://Razorpaycom/payroll/moonlighting-meaning-and-timeline

[9] https://www.legalserviceindia.com/legal/article-9591-moonlighting-dual-employment- in-indian-law.html

[10] https://www.researchgate.net/publication/369344546_Analysis_of_Various_Aspects_of_Moonlighting/link/6415c392315dfb4cce8d0ed0/download

[11] Kumar, S., & Sahoo, S. (2019). Moonshining and Labor Market Outcomes in India. *Indian Journal of Labor Economics*, 62(4), 593–613.

[12] Roy (2020). Moonlight in India: Causes and Effects. *Indian Journal of Labor Economics*, 63(1), 89–103.

[13] Singh, N., & Narayanan, S. (2019). Part-Time Employment in Urban India: Employment Patterns and Earnings. *Indian Journal of Labor Economics*, 62(4), 547-575.

[14] World Bank (2020). India development update. Retrieved from https://www.worldbank.org/en/country/india/publication/india-development-update-october-2020.https://www.drishtiias.com/loksabha-rajyasabha-discussions/perspective- moonlighting-culture

Assessment of Creative Behaviour of Research Scholars: An Analytical Review

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Abstract

The role of research scholars is critical to the advancement of knowledge and the development of new technologies and innovations. Research scholars are required to possess a rangeof skills and qualities to be successful in their work. These include a deep understanding of the theories and methods of their field, as well as critical thinking, analytical reasoning, and problem- solving skills. They must be able to communicate effectively, both in writing and orally, and to work collaboratively with colleagues from diverse backgrounds and disciplines. This research contributes to the existing scientific literature on the collection of creative behaviour of research scholars' data. This paper focuses on the constructs (University structure, Academic supervisor leadership and psychological capital) which affects the creative behaviour of research scholars. This paper is empirical, analytical and descriptive in nature. A future line of research would be to analyse this phenomenon, detecting the creativity of research scholars.

BACKGROUND OF THE STUDY

Creativity holds immense significance within the academic community, especially for research scholars who actively contribute to the progress of knowledge and innovation. The capacity to thinkcreatively is a fundamental aspect that aids in the generation of fresh ideas, the creation of innovativeexperiments, and the facilitation of substantial advancements in their respective fields. Understandingthe factors that influence and promote the creativity of research scholars becomes imperative in nurturing a thriving research ecosystem. This contextual investigation presents an outline of the current literature on the creativity of research scholars, emphasizing crucial discoveries and discussing pertinent sources.

Creativity in Research

Research creativity involves the generation of novel ideas, problem-solving, and the ability to make connections between seemingly unrelated concepts. Amabile's Componential Model of Creativity offers a comprehensive framework for understanding creativity in the research context (Amabile, 1983). The model identifies three major components: domain-relevant

skills, creativity-relevant skills, and intrinsic task motivation. These components interact to influence the creative output of research scholars.

Individual Factors Influencing Research Creativity

(a) **Personality Traits:** Several studies have found positive associations between certain personality traits and research creativity. For example, openness to experience, curiosity, and tolerance for ambiguity have been linked to higher levels of creativity among research scholars (Feist, 1998; Mumford et al., 2002).
(b) **Cognitive Abilities:** Research scholars with high cognitive abilities, including divergent thinking, problem-solving skills, and analytical thinking, tend to exhibit greater creativity in their work (Silvia et al., 2008; Runco, 2010).
(c) **Motivation:** Intrinsic motivation, driven by personal interest, passion, and enjoyment, has been found to be a significant predictor of research creativity. Scholars who are intrinsically motivated to engage in their research are more likely to exhibit higher levels of creativity (Deci et al., 1999).

Environmental Factors Influencing Research Creativity

(a) **Organizational Culture:** Supportive organizational cultures that value and encourage risk-taking, autonomy, and interdisciplinary collaboration tend to foster research creativity. Research institutions that promote a culture of innovation and provide resources for creative endeavors facilitate the creative output of research scholars (Shalley et al., 2004; Tierney et al., 2019).
(b) **Research Environment:** Access to resources, such as funding, facilities, and mentorship, significantly impacts research creativity. Scholars who have sufficient resources and support tend to exhibit higher levels of creative output in their research (Puccio et al., 2010; Hülsheger et al., 2011).
(c) **Social Networks:** Interactions and collaborations with diverse colleagues and experts from different disciplines contribute to the cross-fertilization of ideas and enhance research creativity. Scholars who actively engage in networking and collaboration tend to exhibit greater creative output (Uzzi et al., 2013; Wuchty et al., 2007).

INTRODUCTION

Research scholars often exhibit creative behavior as they explore new frontiers of knowledge and seek innovative solutions to complex problems. The creativity exhibited by research scholars is of utmost importance in their endeavors, as it empowers them to produce fresh and innovative ideas, create distinctive research methodologies, and contribute significantly to the progress of their respective fields. This introduction will delve into the creative behavior of research scholars, placingemphasis on their capability to think divergently, integrate insights from various disciplines, and bravely challenge established paradigms. Throughout the discussion, several references will be presented to reinforce these points.

- **Divergent Thinking:** Research scholars demonstrate a capacity for divergent thinking, which involves generating multiple ideas and solutions. They engage in brainstorming sessions, critically evaluate different possibilities, and pursue unconventional approaches to their research questions. Amabile, T. M. (1983). The social psychology of creativity. Springer.
- **Interdisciplinary Integration:** Research scholars often integrate knowledge from multiple disciplines to address complex research problems. They draw insights from diverse fields, combine methodologies, and bridge gaps between various areas of study. Koestler, A. (1964). The act of creation. Macmillan.
- **Paradigm Shifting:** Creative research scholars challenge existing paradigms and strive to push the boundaries of knowledge. They question established theories, propose alternative explanations, and explore new avenues of inquiry. Kuhn, T.S. (1962). The structure of scientific revolutions. University of Chicago Press.
- **Originality and Innovation:** Research scholars are driven by the desire to contribute something new to their field. They seek to develop innovative ideas, methods, and models that expand the existing knowledge base. Csikszentmihalyi, M. (1996). Creativity: Flow and the psychology of discovery and invention. Harper Perennial.
- **Problem-Solving Abilities:** Creative research scholars exhibit strong problem-solving skills, enabling them to overcome challenges and find effective solutions. They approach complex problems from different angles, apply critical thinking, and employ creative problem-solving techniques. Sawyer, R.K. (2006). Explaining creativity: The science of human innovation. Oxford University Press.

In conclusion, research scholars demonstrate creative behavior by engaging in divergent thinking, integrating interdisciplinary perspectives, challenging paradigms, promoting originality and innovation, and employing effective problem-solving strategies. Their creative endeavors contributeto the advancement of knowledge in their respective fields.

University Dimension

University dimension refers to the various aspects or factors that define a university. It encompasses a range of elements that contribute to the overall character, identity, and quality of the institution. Some of the key dimensions of a university include:

- **Academic dimension:** This encompasses all academic programs and courses offered by the university, including undergraduate, graduate, and doctoral programs, as well as research initiatives and academic collaborations.
- **Research dimension:** This includes the research focus and output of the university, as well as the quality of its research infrastructure and the impact of its research findings.
- **Student dimension:** This encompasses the student body, including demographic information, enrolment, retention rates, and student satisfaction levels.
- **Faculty dimension:** This includes information about the university's faculty, including their qualifications, research interests, and teaching experience.

- **Physical dimension:** This encompasses the physical facilities of the university, including classrooms, libraries, research labs, housing, and other student services.
- **Financial dimension:** This encompasses the financial resources of the university, including funding sources, endowments, and budgeting priorities.
- **Reputation dimension:** This encompasses the university's reputation and standing within the academic community, including its ranking, recognition, and accreditation status.
- **Global dimension:** This encompasses the university's international reach and impact, including its collaborations, partnerships, and exchange programs with institutions and organizations around the world.

Academic Supervisor Leadership

An academic supervisor is a mentor who provides guidance and support to students in their academic pursuits. An academic supervisor plays a crucial role in providing leadership and guidance to students in their academic pursuits. They act as mentors, help students to set and achieve their academic goals, provide constructive feedback, and foster a supportive learning environment. Effective academic supervision involves active communication, clear expectations, and an understanding of the student'sneeds and abilities (Hodge, J., & Bailey, J.E. (2007). ASL could be referred to as a process in whichacademic supervisors construct, protect, and develop students' creativity through empowering, considering, motivating, and developing behaviours (Meng Yi 2018).

Psychological Capital

Psychological capital refers to an individual's positive psychological state of mind that includes confidence, hope, optimism, and resilience. It was first introduced by Fred Luthans in the late 1990s and has since been widely studied in organizational psychology. Psychological capital has been shown to be a significant predictor of job performance, job satisfaction, and well-being, as well as a moderator of the relationship between stress and health outcomes Luthans, F., Norman, S.M., Avolio, B.J., & Avey, J.B. (2008). Luthans and his colleagues developed the construct of psychological capital, hereafter PsyCap, to capture an individual's psychological capacities that can be measured, developed and harnessed for performance improvement (Luthans & Youssef, 2004). individual's positive psychological state of development that comprises four positive psychological resources: self-efficacy, optimism, hope and resilience. Self-efficacy, based on Bandura's social cognitive theory (Bandura, 1997, 2012), refers to an individual's confidence in their ability to mobilize their motivation, cognitive resources and courses of action in order to achieve high levels of performance (Stajkovic & Luthans, 1998).

Individuals with high self-efficacy generally have a stronger belief in their ability to control outcomes and succeed in addressing difficult challenges than those low in self-efficacy (Bandura, 1997).

Optimism refers to an individual's expectancy of positive outcomes (Scheier, Carver, & Bridges, 2001). Hope is composed of two components: agency (goal-directed energy) and

pathways (Snyderetal.,1996). Whereas agency refers to an individual's motivation to succeed at a specific task in a set context, pathways refer to the way or means by which that task may be accomplished (Luthans, Norman, Avolio, & Avey, 2008). resilience refers to the ability of an individual to bounce back from adversity, uncertainty, risk or failure, and adapt to changing and stressful life demands (Masten & Reed, 2002; Tugade & Fredrickson, 2004).

Creativity Behaviour

Creative behavior is a form of human behavior that involves generating new and original ideas, concepts, products, or solutions. It can refer to a variety of activities, including artistic expression, problem-solving, and innovation. Creativity is a complex and multi-faceted construct that is influenced by a variety of factors, including genetics, environment, experience, and motivation. Creativity is referred to as novel, original, useful, and appropriate outcomes of heuristic tasks, such as discovering new evidence, inventing new instruments, formulating new cognitive frames, extracting new theoretical laws, and so on (Amabile, 1983).

In componential theory (Amabile, 1983; Amabile, et al., 1996; Amabile & Mueller, 2008), creativity is the outcome of a social environment influencing three within-individual components: intrinsic motivation, professional knowledge, and creative thinking.

Creativity can be defined as "the interaction among aptitude, process and environment by which an individual or group produces a perceptible product that is both novel and useful." (Plucker, Beghetto 2004). Creativity is defined as "the generation of products or ideas that are both novel and appropriate" (Hennessey & Amabile, 2010).

Creative behavior is the generation of novel and useful ideas and the adoption of others' ideas that are new to the organization and can bring about innovative (Yuan & Woodman, 2010).

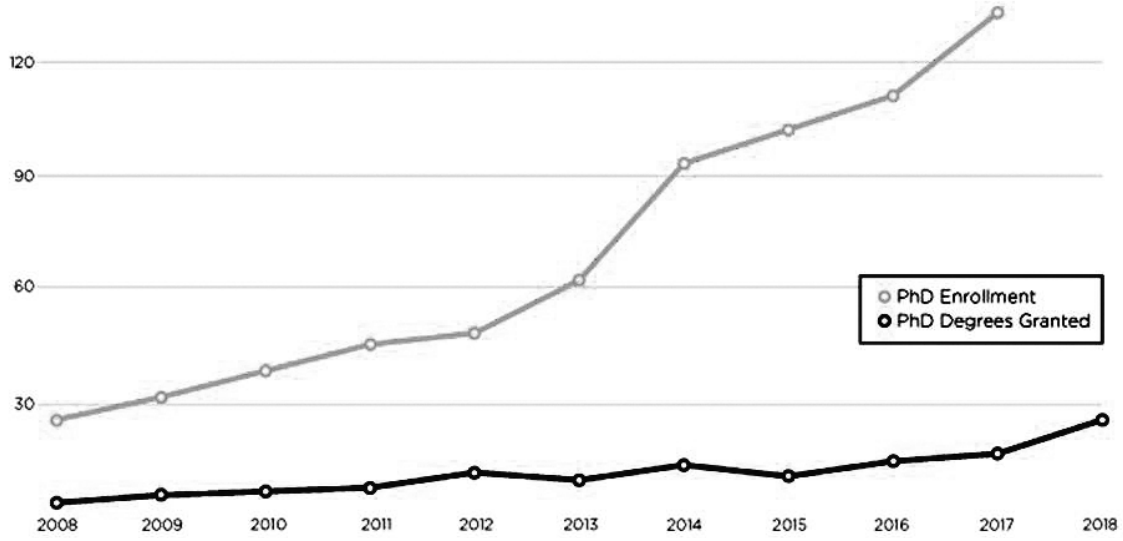


Figure 1: PhD Enrollment and PhD Degree Granted in India

In line expansion of higher education in India, there is huge difference between PhD enrolment and PhD degree granted. There is salient quality problem in India's current doctoral education is the low level of creativity among PhD students, despite creativity being designated a core goal of PhD degrees. Enhancing the creativity of doctoral students is one of the key objectives of current review paper.

METHODOLOGY

To achieve our research goals, we conducted a bibliometric analysis of research papers to recognize the body of available research papers related to creative behavior of research scholars The first step of this method is to find the articles related to the topic, gather them from various databases and conduct a bibliometric analysis to map the most important themes and fields on the core topic.

Search Strategy and Data Collection

To identify the appropriate articles for our aim, we executed a search on the Scopus database by using keywords related to creative behaviour of research scholars. Using two operators, i.e. "AND" & "OR". We use the string "creativity" OR "creative behaviour" AND "PhD students" OR "scholars" OR "psychological capital" OR "university structure" OR "social capital" OR "supervisor leadership" OR "academic supervisor leadership". The above syntaxes are searched in the TIT-ABS-KEY field of the Scopus data base search engine.

The search was performed in March 2023 (2013 to 2023) and we obtained 429 articles. Filtering this initial dataset out, English articles belonging to business management and accounting and psychology and limits to articles, reviews and conferences, then includes only English language papers, we finally retrieved 429 articles.

RESEARCH OBJECTIVES

- What is the distribution pattern of published annual documents on creative behavior of research scholars?
- What or who are the main contributors in terms of journals, authors, countries, and documents related to the creative behavior of research scholars?
- What are the most frequently discussed themes and the corresponding evolving trends on creative behavior of research scholars?

We have total 429 documents for the analysis (Figure 2). The search was performed till 2023, and we got 2146 papers. Filtering these papers initially ranged from 2013-2023, then we got 1624 papers. After that filtering belongs to business management and accounting and psychology, then we got 607 papers. After that filtering data that belongs to articles and reviews and conference papers, then apply limits to, we got 407 papers. In the last filtering, we select only English language papers. Finally, we got 429 papers, then exported in CSV format to obtain all the data which will analysing with the help of VOSviewer and RStudio.



Figure 2: PRISMA Framework

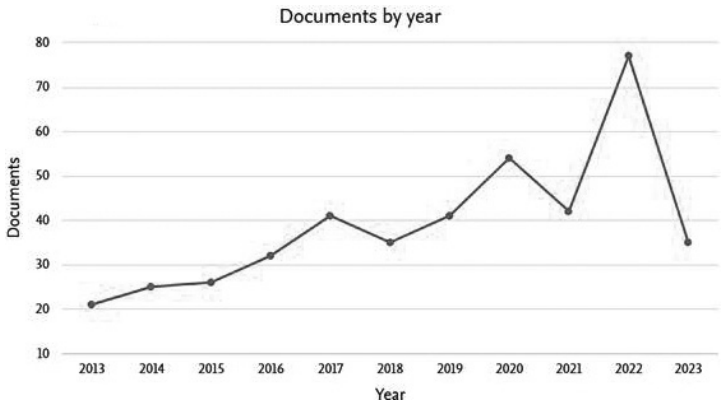


Figure 3: Simple Line Graph

The term creative behaviour of research scholars illustrates in the simple line graph in Figure 3, which shows that the number of papers on the subject is increasingly from 2018 onwards, with 35 papers published in that year. There were 41 papers published in 2019, 54 papers published in 2020, 42 papers published in 2021, 77 papers published in 2022 and 35 papers were published in 2023 on creative behaviour of research scholars.

Sample Characteristics



Figure 4: Main Information of the Dataset

A total of 429 papers are selected for analysis (Figure 4), which has been collected from 281 sources (articles, reviews, etc.) and annual growth rate is 5.24%. The average citation per document is 18.21. These documents are authored by 1074 researchers, there are 90 authors of single-authored documents, 25.87% international co-authorship and 2.72 co-authorship per documents and 1422 author's keywords found.

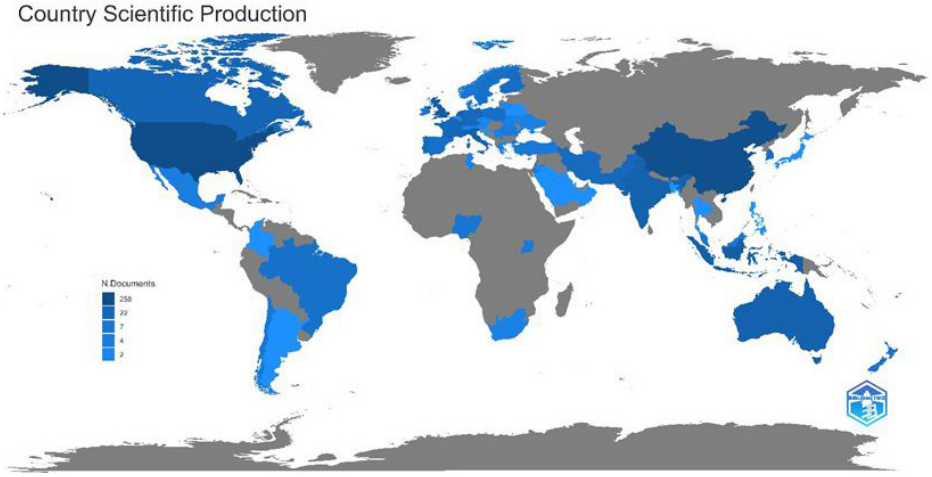


Figure 5: Country Scientific Production

Region	*Frequency*	*Region*	*Frequency*	*Region*	*Frequency*
USA	258	Itly	47	Netherland	40
China	204	India	44	Canada	31
UK	68	Australia	40	France	25
Indonesia	55				

Figure 6: Top 10 producing nations

Figure 6 pertains the top 10 corresponding countries with the domain of creative behaviour of research scholars. Figure 5 shows a visualised map of the countries and an exact number of papers which published by the related countries.

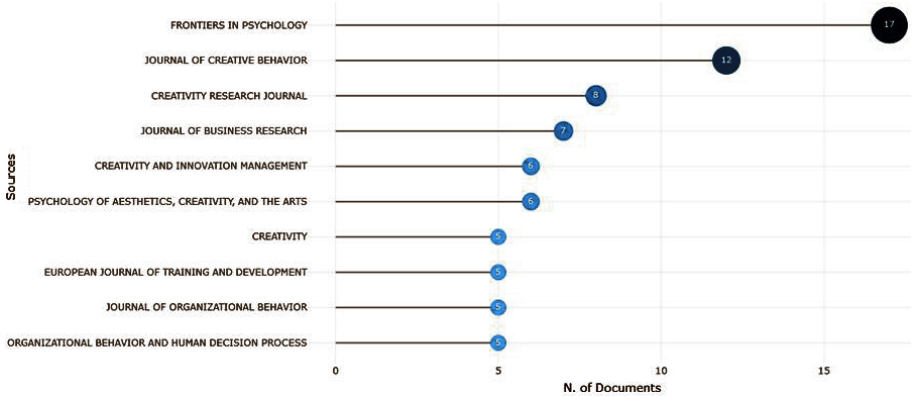


Figure 7: Main Relevant Sources

Sources	*Articles*
Frontiers in Psychology	17
Journal of Creative Behaviour	12
Creativity Research Journal	8
Journal of Business Research	7
Creativity and Innovation Management	6
Psychology of Aesthetics, Creativity and the Arts	6
Creativity	5
European Journal of Training and Development	5
Journal of Organizational Behaviour	5
Organizational Behaviour and Human Decision Processes	5

Figure 8: List of Most Relevant Journals

The most relevant journal refers to a scholarly or academic publication that is considered to be the most appropriate and respected forum for publishing research related to a particular topic or field of study. Figure 8 shows the most relevant journals. Frontiers in Psychology with 17 articles then Journal of Creative Behaviour with 12 articles and Creativity Research Journal with 8 Articles.

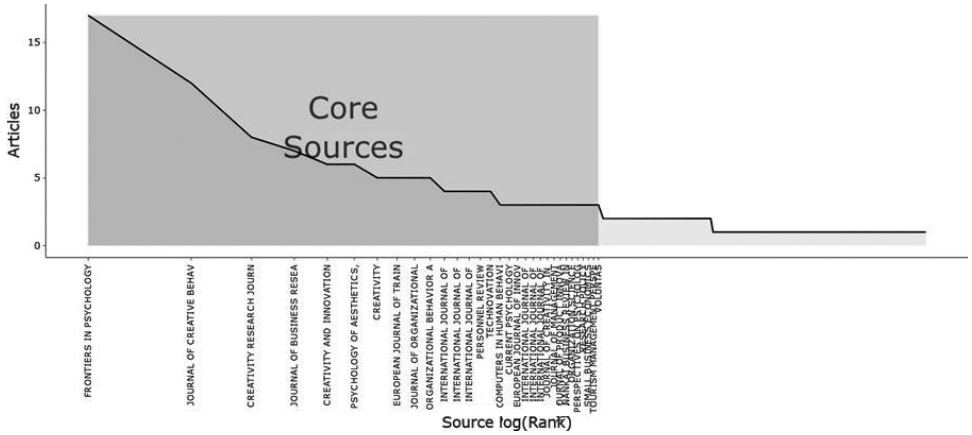


Figure 9: Source Clustering through Bradford's Law

Organizational

Sources	*Rank*	*Freq*	*cumFreq*	*Zone*
Frontiers in Psychology	1	17	17	Zone 1
Journal of Creative Behaviour	2	12	29	Zone 1
Creativity Research Journal	3	8	37	Zone 1
Journal of Business Research	4	7	44	Zone 1
Creativity and Innovation Management	5	6	50	Zone 1
Psychology of Aesthetics, Creativity and the Arts	6	6	56	Zone 1

Creativity	7	5	61	Zone 1
European Journal of Training and Development	8	5	66	Zone 1
Journal of Organizational Behaviour	9	5	71	Zone 1
Organizational Behaviour and Human Decision Processes	10	5	76	Zone 1

Figure 10

Bradford's Law is often used in research to help identify core journals in a field, which are likely to publish the most important and influential research. Researchers may use Bradford's Law to develop a list of key journals to search when conducting a literature review or to determine which journals to target when submitting their own research for publication. Figure 11 represent the graphical representation of Bradford's law and Figure 12 represent the table of Top 10 Source clustering through Bradford's Law.

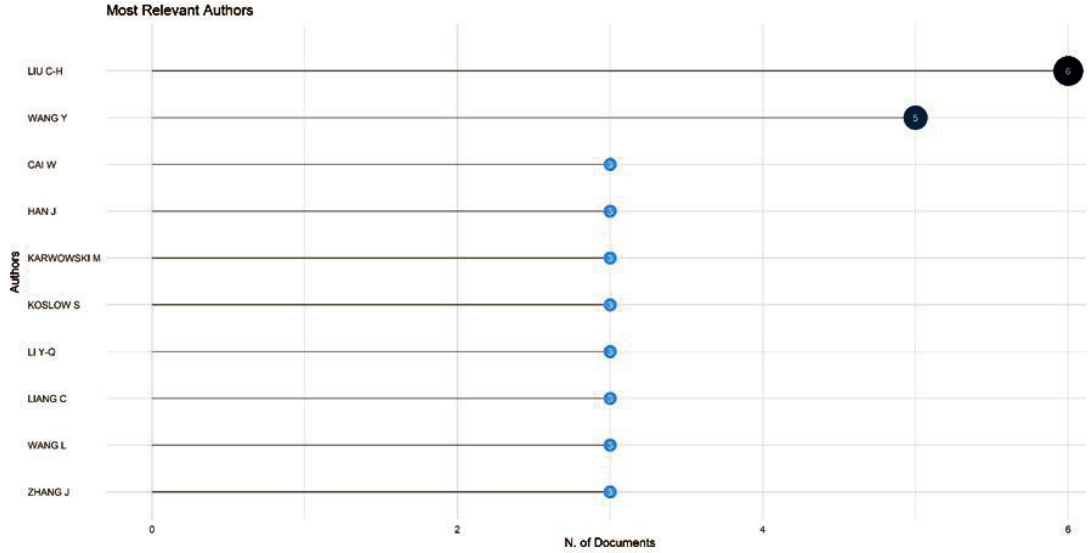


Figure 11: Top Relevant Authors

Authors	*Articles*	*Articles Fractionalized*
LIU C-H	6	3.08
WANG Y	5	1.33
CAI W	3	0.95
HAN J	3	1.17
KARWOWSKI M	3	0.81
KOSLOW S	3	1.03
LI Y-Q	3	1.33
LIANG C	3	1.08
WANG L	3	1.08
ZHANG J	3	0.95

Figure 12: Table of Top 10 Relevant Authors

Figure 12 represents the top authors related to the creative behaviour of research scholars. LIU C-H is the top author with 6 articles, WANG Y with 5 articles, CAI W with 3 articles and HAN J with 3 articles.

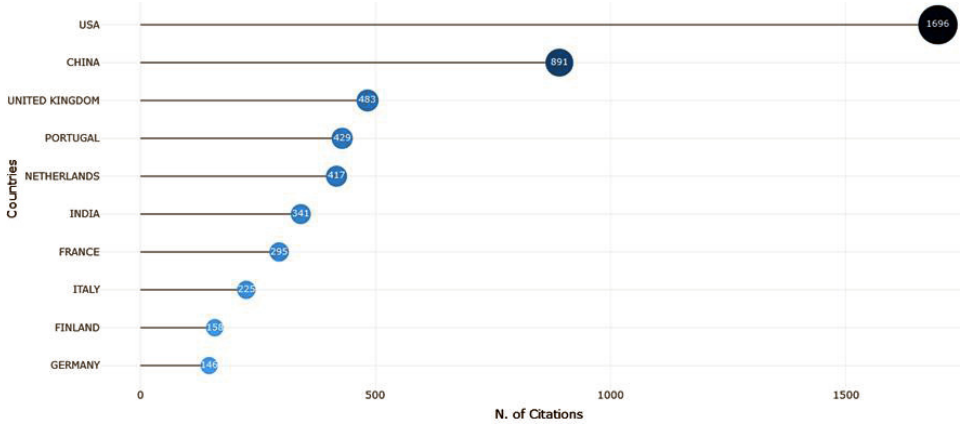


Figure 13: Top Cited Countries

Figure 13 explain the top cited countries. Top cited countries means how many articles are publishedby the country in the relevant field. USA is the top cited country with 1696 citations, China with 891 citations and United Kingdom with 483 citations.



Figure 14: Word Cloud

Terms	*Frequency*		*Terms*	*Frequency*
Creativity	41		Female	10
Human	27		Male	10
Article	16		Social capital	10
Human Experiment	14		Workplace	8
Humans	11		Adult	7

Figure 15: Table of Word Cloud

Figure 15 shows the graphical representation of word cloud. Word cloud explain the number of most used keywords in the relevant domain i.e., creative behavior of research scholars. In this figure, top 5 keywords are creativity with 41 frequencies, humans with 27 frequencies, article with 16frequencies, human experiments with 14 frequency and humans with 11 frequencies.

Co-Authorship Analysis by Authors

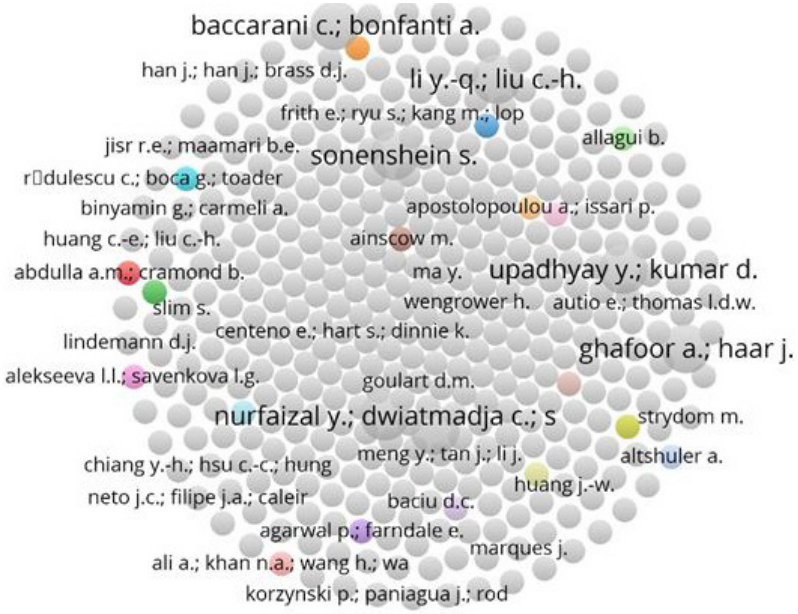


Figure 16: Co-Authorship Analysis by Authors

Co-authorship analysis counting and studying the extent to which authors, institutions, and countries collaborate on authorship to determine their relatedness (Figure 16). Represent the analysis map of co-authorship analysis by authors. There is total 419 authors and 199 clusters, 597 links and 629 total link strength. Top three most productive authors are Abdulla A.M, with 1 documents, 14 citations and 15 total link strength, Abdulla N.H. with 1 documents, 2 citations and 15 total link strength and Acevedo B. also with 1 documents, 1 citations and 15 total link strength.

Co-authorship Analysis by Countries

Figure 17, in order to analyse the situation in terms of international collaboration, we look at nationsare working together to publish articles on creative behaviour of research scholars. There is total 29 countries, 7 clusters, 117 links and 208 total link strength. United States is the top producing countrywith 126 documents, 3324 citations, 78 total link strength and 17 links, United Kingdom with 40 documents, 923 citations, 36 total link strength and 12 links and China with 59 documents,736 citations, 35 total link strength and 13 links.

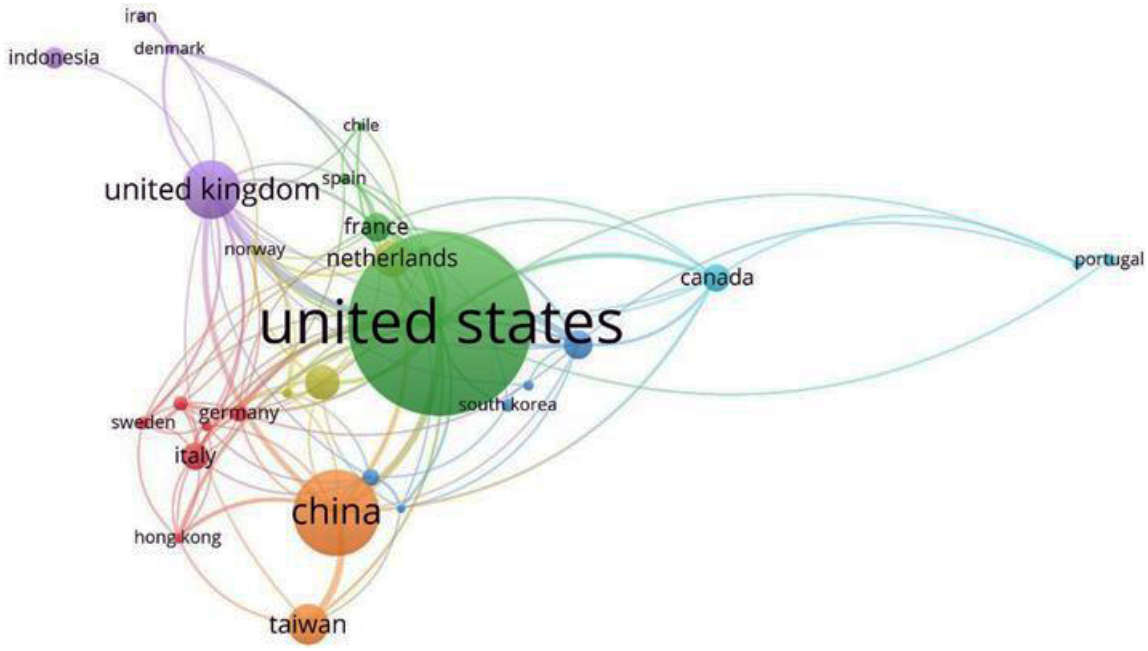


Figure 17: Co-Authorship Analysis by Countries

DISCUSSION

The current status of globalization of higher education can be examined in this study by using bibliographic review. VOS viewer, and r-studio are a bibliographic mapping tool, used in the study for the analysis of citation, authorship, volume of publications, origin of the instructionalmaterials, aswell as a number of other matrices associated with the publication etc included inthe Scopus databaseusing the research results.

There are emerging major clusters of authors for journals, nations, authors, articles and institutions but their networks are still dispersed across several additional networks outside theprimary clusters. There is still much scope for new or additive research on creative behaviour of research scholars and prospective authors do not need to rely on existing authors or journal networks to publishtheir work. This indicated that the topics related to globalization of higher education are still in its early stage.

This study contributes to the literature and provide an overview on the study creative behaviour of research scholars by describing the direction that not only for business management but also sociology and finance researchers have taken in studying this field, and hope that this bibliometric analysis will assist Business management in determining which areas need further research and also helps in evaluating in development of theory.

The findings reveal the importance of authentic leadership in predicting scholars' creativity and shed light on the nature of this relationship. Genuine academic leaders encourage students' psychological capital, which increases their creative output by stimulating their inventiveness. The study also demonstrates a direct relationship between genuine leadership

and scholars' creativity, suggesting that elements other than psychological capital may help to explain the beneficial effects of genuine leadership on creativity. Future research would benefit from examining if authentic leaders foster feelings of empowerment, engagement, happiness, intrinsic drive, and a stronger commitment to their supervisors in order to foster creativity in students.

A future line of research would be to analyse this phenomenon, detecting the creativity of research scholars.

Another interesting line of research would be to perform a cluster analysis of the scholar's creativity. Although authors on this topic offer keywords that can be clustered, Analysis of these clusters would provide relevant information for a more detailed understanding of the creativity of research scholars.

In terms of keyword analysis, a fascinating area for future research would be to look into the techniques used to gauge students' degrees of originality. The most important creative variables that inspire students to develop their creativity should be identified as well.

LIMITATIONS OF THIS STUDY

This study uses only one database that is SCOPUS. The subject area is also limited by Business Management and Accounting. Only English medium papers are included there. The conclusion of this study may not completely represent all the work done in the field of creative behaviour of research scholars because other database is not considered there, such as web of science, j gate and many more.This paper is not without its limitations. There are restrictions related to the method used, the databaseand the choice of data. With regard to the method, only publications that correspond to the intersectionof key words Using two operators, i.e. "AND" & "OR". We use the string "creativity" OR "creative behaviour" AND "PhD students" OR "scholars" OR "psychological capital" OR "university structure" OR "social capital" OR " supervisor leadership" OR "academic supervisor leadership". in thetitle, abstract and keywords. Other combinations would have resulted in differentlists of publications. In terms of the database, the clearest limitation lies in having restricted the bibliometric analysis to the Scopus Core Collection. However, this was intentional as such an in- depth analysis would not have been possible with a combination of various databases. It should be added that the limitations in term of scope that apply to the Scopus Core Collection also apply to this research. With regard to the choice of data, this was restricted to articles published in journals, discarding other sources such as books, conference papers, etc. Therefore, if more sources had been considered, the results would have been different. However, on this last point, the prevailing idea was to aggregate information as homogeneously as possible.

To create even more thorough classifications of journals, academics, academic institutions, and countries, as well as to extrapolate the results to the full range of publications on this topic in relation to the creativity of research scholars, it would be interesting to include a larger number of academic databases, such as Web of Science, J-gate, and Google Scholar. It is observed that there is little literature on creativity of research scholars, which can be

a promising line of research. Studying the antecedents of scholars' creativity is important because, to survive and prosper, society need to take full advantage of their research scholars' creative potential, so that innovation, change, learning, performance, and competitiveness can be sustained. This study includes only articles, conference papers and review papers on globalization of higher education. This kind of analysis is no more useful for that researchers who do not have the access of Scopus because this software not an open access software. Also, there is the main use of VOS viewer software, without understanding of VOS viewer this analysis is not possible.

We hope that this study will provide the future research agenda in the field of creative behaviour of research scholars.

REFERENCES

[1] Amabile, T.M. (1983). The Social Psychology of Creativity: A Componential Conceptualization. *Journal of Personality and Social Psychology*, 45, 357–376. http://dx.doi.org/10.1037/0022-3514.45.2.357

[2] Anderson, N., Salgado, J.F., & Hülsheger, U.R. (2010). Applicant reactions in selection: Comprehensive meta-analysis into reaction generalization versus situational specificity. *International Journal of Selection and Assessment*, 18(3), 291–304. https://doi.org/10.1111/j.1468-2389.2010.00512.x

[3] Bandura, A. (1997). Self-efficacy: The exercise of control. WH Freeman/Times Books/ Henry Holt & Co.

[4] Bloom, J.L., Propst Cuevas, A.E., Hall, J.W., & Evans, C.V. (2007). Graduate students' perceptions of outstanding graduate advisor characteristics. *NACADA Journal*, 27(2), 28–35. https://doi.org/10.12930/0271-9517-27.2.28

[5] Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and Quantity*, 36(4), 391–409. https://doi.org/10.1023/A:1020909529486

[6] Carroll, M. (2008). Supervision and transformational learning. *Psychotherapy in Australia*, 14(3), 38– 45.

[7] Chemers, M.M., Watson, C.B., & May, S.T. (2000). Dispositional affect and leadership effectiveness: A comparison of self-esteem, optimism, and efficacy. *Personality and Social Psychology Bulletin*, 26(3), 267–277. https://doi.org/10.1177/0146167200265001

[8] Chiaburu, D.S., & Harrison, D.A. (2008). Do peers make the place? Conceptual synthesis and meta- analysis of coworker effects on perceptions, attitudes, OCBs, and performance. *Journal of Applied Psychology*, 93(5), 1082–1103. https://doi.org/10.1037/0021-9010.93.5.1082

[9] Csikszentmihalyi, M. (1997). Creativity: Flow and the psychology of discovery and invention. HarperCollins.

[10] Deci, E.L., Koestner, R., & Ryan, R.M. (1999). A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. *Psychological Bulletin*, 125, 627–626. http://dx.doi.org/10.1037/0033-2909.125.6.627

[11] Delamont, S., Atkinson, P., & Parry, O. (1997). Supervising the PhD. A Guide to Success. Buckingham, England: The Society for Research into Higher Education.

[12] Dey, I. (2003). Qualitative Data Analysis: A User Friendly Guide for Social Scientists. London, England: Routledge.

[13] Donald, J.G., Saroyan, A., & Denison, D.B. (1995). Graduate student supervision policies and procedures: A case study of issues and factors affecting graduate study. *Canadian Journal of Higher Education*, 25(3), 71–92. https://journals.sfu.ca/cjhe/index.php/cjhe/article/view/183223

[14] Elgar, F.J. (2003). PhD degree completion in Canadian universities: Final report. Halifax, NS: The Graduate Students Association of Canada. Retrieved from http://careerchem.com/CAREER-INFO- ACADEMIC/Frank-Elgar.

[15] Emilsson, U.M., & Johnsson, E. (2007). Supervision of supervisors: On developing supervision in postgraduate education. *Higher Education Research & Development*, 26(2), 163–179. https://doi.org/10.1080/07294360701310797

[16] Esposito, G., van Bavel, R., Baranowski, T., & Duch-Brown, N. (2016). Applying the model of goal-directed behavior, including descriptive norms, to physical activity intentions: A contribution to improving the theory of planned behavior. *Psychological Reports*, 119(1), 5– 26.https://doi.org/10.1177/0033294116649576

[17] Feist, G.J. (1998). A Meta-Analysis of Personality in Scientific and Artistic Creativity. *Personality and Social Psychology Review*, 2, 290–309. http://dx.doi.org/10.1207/s15327957pspr0204_5

[18] Forester, M., Kahn, J.H., & Hesson-McInnis, M.S. (2004). Factor structures of three measures of research self-efficacy. *Journal of Career Assessment*, 12(1), 3–16. https://doi.org/10.1177/1069072703257719

[19] Freshwater, D. 2001. What is the role of reflection in practice development? In the handbook of practice development, ed. A. Clark, J. Dooher, and J. Fowler. London: Quay.

[20] Gatfield, T. 2005. An Investigation into PhD supervisory management styles: Development of a dynamic conceptual model and its managerial implications. *Journal of Higher Education Policy and Management* 27, No. 3: 311–25.

[21] Gee, J.P. 2001. Identity as an analytic lens for research in education. *Review of Research inEducation* 25: 99–125.

[22] Gurr, G.M. 2001. Negotiating the rackety bridge: A dynamic model of aligning supervisory style with research student development. *Higher Education and Research Development* 20, no. 1: 81–92.

[23] Hennessey, B.A. and Amabile, T.M. (2010). Creativity. *Annual Review of Psychology*, 61, 569-598. https://doi.org/10.1146/annurev.psych.093008.100416

[24] Johnson, R., and R. Usher. 1997. Re-theorising experience: Adult learning in contemporary social practices. *Studies in the Education of Adults* 29, no. 2: 137–52.

[25] Klenowski, V., and I. Lunt (2008). Enhancing learning at doctoral level through the use of reflection? *Assessment & Evaluation in Higher Education* 33, No. 2: 203–17.

[26] Kuhn, T.S. (1962). The Structure of Scientific Revolutions. Chicago, IL: University of Chicago Press.

[27] Leadership Self-Efficacy in Doctoral Programs, *Journal of Higher Education Policy And Leadership Studies* (*JHEPALS*) 20.

[28] Luthans, Fred; Norman, Steven M.; Avolio, Bruce J.; and Avey, James B. (2008), "The Mediating Role of Psychological Capital in the Supportive Organizational Climate–Employee Performance

Relationship". Management Department Faculty Publications. 136. http://digitalcommons.unl.edu/managementfacpub/136

[29] Masten, A.S., & Reed, M.-G.J. (2002). Resilience in development. In C.R. Snyder & S.J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 74–88). Oxford University Press.

[30] Runco, M.A. (2008). Commentary: Divergent thinking is not synonymous with creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 2(2), 93–96. https://doi.org/10.1037/1931-3896.2.2.93

[31] Sawyer, R.K. (2006) Educating for Innovation. *The International Journal of Thinking Skills and Creativity*, 1, 41–48. https://doi.org/10.1016/j.tsc.2005.08.001

[32] Shalley, C.E. and Gilson, L.L. (2004) What Leaders Need to know: A Review of Social and Contextual Factors that can Foster or Hinder Creativity. *The Leadership Quarterly*, 15, 33–53. http://dx.doi.org/10.1016/j.leaqua.2003.12.004

[33] Yao, L.M., & Zhu, L.M. (2013). The investigation of postgraduate cultivation. *Journal of Higher Education*, 34(11), 55–59.

[34] Yi M, Zhao C. (2018), Academic Supervisor Leadership and Its Influencing Mechanism on Postgraduate Creativity in China, Thinking Skills and Creativity, https://doi.org/10.1016/j.tsc.2018.05.006

[35] Yuan, F., & Woodman, R. (2010). Innovative Behavior in the Workplace: The Role of Performance and Image Outcome Expectations. *Academy of Management Journal*, 53, 323–342.

[36] Yukl, G. (2012). Leadership in organization (8th ed). Essex, England: Pearson Education Limited.

[37] Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behavior: Integrating a half century of behavior research. *Journal of Leadership and Organizational Studies*, 6, 15–32.

[38] Zacher, H., & Johnson, E. (2015). Leadership and creativity in higher education. *Studies in Higher Education*, 40, 1210–1225.

Psychology of Indian Ultra Marathon Runners

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Abstract

An Ultra Marathon is a foot race which is more than the standard marathon distance of 42.2 km and is usually set at 50 km, 100km or above. These races are usually conducted in natural settings like mountains, forests or deserts and runners have to face harsh climatic and terrain conditions to complete them. A purposive sampling of ten Indian ultra-marathon runners was done for a qualitative study by conducting semi-structured interviews. The results indicate positive linkages between a sense of self-realization to challenge disease and live healthy, intra personal growth and transference to the workplace. The implications of these findings suggest that Ultra marathon running is a sustainable green lifestyle strategy leading to mental, physical, spiritual and societal wellness which boosts creativity and productivity and can dramatically reduce the burden on medical infrastructure, thereby minimizing the carbon footprint per individual.

Keywords: *Psychology, Ultra Marathon Running, Indian.*

INTRODUCTION

An ultra-marathon can be defined as any athletic event involving a running distance longer than the traditional marathon length of 42.195 km (Knechtle, B ; Nikolaidis, P, 2015) Alternatively, an ultra-marathon can also be defined as any running competition lasting longer than six hours, whereas six hours and longer is defined as any ultra-endurance performance. Ultra-marathons can be held as distance-limited races in km or miles and in time-limited races in hours or days. The most often held ultra-marathons in distance-limited races are races in 50 km, 100 km, 50 miles and 100 miles. However, there are also longer running races up to 1000 km and 3100 miles. For the time-limited races, these are held as 6-hour, 12-hour, 24-hour, 48-hour, 72-hour, 6-day, and 10-day races as the most common durations.

They can be single stage or multi stage with a reasonable distance covered by the athletes in a semi self-supported manner. Navigation on the trail can also be partially self - supported over considerable stretches of distance. These races are generally conducted in tough natural environments like mountains, forests, deserts, beaches or snowscapes.

There has been an exponential growth in the number of Ultra marathons being run since the last 10–15 years all over the world including India. While on the international scale this growth has initially been very gradual since about fifty years back. In case of India the take-off has apparently been quite slow with the first ultra-marathon hosted in 2007 in Bengaluru. Since then, the number of recorded races till Feb 2023 stands at 691 as per the authoritative

German repository of data of ultra -marathon races since 1985, 'DVC Ultra statistic'. However, this number is likely to be substantially high as many races are not registered with the website due to the high registration fees involved.

Motivation

In light of this growth in the last 16 years, and the world-wide socio-economic profile dominantly being the higher strata, holding high academic qualifications and leadership appointments, there is likely a linkage between professional stress release strategies and seeking work life balance/self-actualization in Indian ultra-marathoners also. Despite the growing literature on the subject, much needs to be discovered about the motivation of these remarkable athletes with the ethnographic lens focused on Indian ultra-marathon runners and its possible impacts on their social, personal and professional lives. Pitfalls of running addiction/dependence and injuries due to over exercise also need to be examined. Some unexpected findings may also be waiting to be discovered. Indeed, there is no specific evidence so far of any research having been conducted on Indian Ultra – Marathoners in the Indian socio – economic and cultural context and this will make it an interesting study in comparison with the world stage and by itself.

Objectives

The study has the following objectives: -

- To examine the motivations of Indian ultra-marathon runners in undertaking these grueling runs.
- To examine the resilience of Indian ultra – runners.
- To examine impacts of reinforcing and debilitating thoughts on demographic profile (social, marital, personal and professional relationships) of ultra-marathoners.
- To examine impact of ultra-running on well-being (mental and physical wellness) of runners.

Description of the Research Work

The research attempts to answer the following problems:

- Can Ultra marathon running be used as an effective intervention to bolster self – esteem, thereby helping in enjoying better mental health which could be a precursor to quality productivity at work place.
- Are ultra-marathon runners more resilient in handling volatility of events affecting their personal and professional relationships, thereby generally enjoying better health and posing minimum burden on medical facilities of the state.
- Is Ultra marathon running effective in building a community which provides support and motivation to individuals, thereby helping in building a strong well-knit community.

Solution Methodologies

It is proposed to conduct a two-tier exploratory qualitative inquiry as follows:

- The research work will include Indian runners, who for the sake of precise definition are holding Indian citizenship and are ordinarily residing in India.
- These runners can be divided into demographic sub profiles based on gender, marital / socio cultural status and profession.
- The ultra-runners have to be able bodied in the normal course in that their limbs and senses are functional and they can do their running unaided, except when rules permit runners to take support of crew members in long races.
- The first level will be a modified self-administered questionnaire from among the standard matured instruments, specific to marathon runners, with citations, which are given in the next paragraph.
- These questionnaire responses will be screened and cleaned and thereafter some respondents will be randomly contacted every week by e mail and word of mouth for their agreement for unstructured interviews. These are considered crucial to diving deep into the psyche of ultra-marathon runners as there is no concrete causality that has been established as yet to know the motivations of these remarkable athletes more so in the Indian socio-cultural context.
- The Frame of Ultra Marathoners – The contact details of ultra-marathon runners can be obtained through open sources as follows:
  - German website DVC which maintains records of all ultra-marathoners in the world.
  - International Trail Running Association (ITRA) website
  - Websites of various Indian companies conducting ultra-marathons
  - Clubs/Running Groups on social media by using personal liaison and word of mouth.
  - Snowballing effect for serving the questionnaire and getting volunteers for the interviews.

Interpretation of the Results/Output

The themes generated from this qualitative study will then be analyzed for interpretation. This could be done using Qualitative Data Analysis software like QDALite which is quite economical.

Limitations

The following limitations are envisaged:

- Time and money constraints in conducting interviews of ultra-runners to go into the depths of their minds. While efforts will be made to conduct maximum one on one interviews, however, for sake of economy of money and time, online interviews will be conducted.

- The questionnaires to be circulated for a much larger number of ultra-runners may only be able to graze the surface of the phenomenon, thereby depriving quality findings. A response rate of 25 % is being envisaged.
- Stadium runs and treadmill experiments have been excluded as they do not challenge the mind of an ultra-runner by exposing them to the hazards of night running in a sleep deprived state in unknown terrains with a possibility of encountering wildlife and other such life-threatening situations like flooded roads, uprooted trees and totally uninhabited vast expanses in pitch darkness.

Conclusions

It is not possible to draw any conclusions at this stage. Moreover, as it is a qualitative study, the Researcher will make some propositions on completion of the research.

RESEARCH INSTRUMENTS SPECIFIC TO MARATHON RUNNING AND SPORTS PSYCHOLOGY

The Motivation of Marathoners Scale (MOMS). In 1993, Master and colleagues (1993) developed the Motivation of Marathoners scale (MOMS) to study the types of motivation that influence runners to participate in the marathon. This scale has been the standard to analyze marathon runners and has recently been suggested to provide meaningful psychological analyses for other endurance activities, such as ultra- marathon events (Masters and Ogles, 1995; Masters and Ogles, 1998; Masters et al., 1993; Ogles and Masters, 2000; Ogles et al., 1995; Ogles and Masters, 2003). However, despite its development over two decades ago, only a handful of investigators have used the MOMS with ultra-marathon participants. The MOMS is a 56-item instrument that identifies the motives of long-distance runners (Carmack and Martens, 1979; Curtis and McTeer, 1981; Johnsgard, 1985; Masters et al., 1993; Summers et al., 1983; Summers et al., 1982). The MOMS utilizes nine scales to assess four categories of motivation, that include psychological, physical, social, and achievement. The questionnaire has been shown to be valid and reliable for marathon runners with sufficient internal consistency (Cronbach's alpha range of 0.80–0.93).

The profile of mood states (POMS, McNair, Lorr, & Droppleman, 1992) is a frequently used and reliable self-report measure that monitors mood-state changes in athletes in order to detect early signs of and prevent overtraining. Although the POMS focuses mainly on negative emotions. The POMS consists of 65 items, divided into six mood factors. The factors are: (1) tension, (2) depression, (3)anger, (4) fatigue, (5) vigour, and (6) confusion. Answers are rated on a 5-point Likert-type scale, ranging from 0 (not at all) to 4 (extremely).

Emotional Recovery Questionnaire (EmRecQ, Lundqvist & Kenttä, 2010). It is suggested that the EmRecQ offers a potential to monitor the recovery process by accounting for positive emotional processes previously neglected by the POMS. The inventory consists of 22 items, divided into five factors. The factors are (1) happiness, (2) security, (3) harmony,

(4) love/appreciation from others, and (5) vitality. The answers are rated on a 5-point Likert-type scale ranging from 0 (not at all) to 4 (extremely).

Narrative interview. The Narrative-oriented inquiry method (NOI). It emphasises that narratives are not just a form of qualitative data or a special procedure for analysing data, but a methodological technique (Hiles & Cermák, 2008). This form of qualitative research explores meaning and experiences that are connected to the narrative that have the potential to give a deeper understanding of an event or phenomenon (Smith & Sparkes, 2009). More specifically, the narrative perspective assumes that story-telling plays an important role in human activity. Stories often dominate human discussions and are a fundamental process for organising and structuring human experiences and actions, as well as a meaning-making process important for understanding a person's reality (Jowett & Frost, 2007).

Day Reconstruction Method (DRM) instrument is an instrument used to help respondents systematically recall and reconstruct their memories of events.

REFERENCES

[1] Anthony W. Brace, Kendall George, Geoff P. Lovell (2020), Mental toughness and self-efficacy of elite ultra-marathon runners, ProQuest document ID 2457581867 DOI https://doi.org/10.1371/journal.pone.0241284 Publisher: Public Library of Science Published: November 4, 2020

[2] Boudreau, Alison L; Giorgi, Barbro. *Journal of Phenomenological Psychology; Atlantic Highlands* Vol. 41, Iss. 2, (2010): 234–267. The Experience of Self-Discovery and Mental Change in Female Novice Athletes in Connection to Marathon Running.

[3] Brian Harman, Céline Kosirnik, Roberta Antonini Philippe (2019), From social interactions to interpersonal relationships: Influences on ultra-runners' race experience. https://doi.org/10.1371/journal.pone.0225195

[4] Charles S. Urwin, Luana C. Main, Antonina Mikocka-Walus, David R. Skvarc, Spencer S.H. Roberts, Dominique Condo, Amelia J. Carr, Lilia Convit, William Jardine, Shant S. Rahman & Rhiannon M. J. Snipe (2021), The Relationship Between Psychological Stress and Anxiety with Gastrointestinal Symptoms Before and During a 56 km Ultramarathon Running Race, Publisher Springer Nature B.V. https://doi.org/10.1186/s40798-021-00389-5

[5] Corrion K, Morales V, Bergamaschi A, Massiera B, Morin J-B, d'Arripe-Longueville F (2018). Psychosocial factors as predictors of dropout in ultra-trailers. *PLoS ONE* 13(11): e0206498. https://doi.org/10.1371/journal.pone.0206498

[6] Daniel Krokosz, Ilona Bidzan-Bluma, Wojciech Ratkowski, Keqiang Li and Mariusz Lipowski (2020), Changes of Mood and Cognitive Performance before and after a 100 km Night time Ultramarathon Run, https://doi.org/10.3390/ijerph17228400

[7] Díaz-Gilbert, M. (2018). The Ascetic Life of the Ultrarunner. *Spiritus: A Journal of Christian Spirituality*, 18(2), 201–217. doi:10.1353/scs.2018.0025

[8] Gibson, Alan St Clair; De Koning, Jos J; Thompson, Kevin G; Roberts, William O; Micklewright, Dominic; et al. Sports Medicine; Auckland, Vol. 43, Iss. 6, (Jun 2013): 413–24. Crawling to the Finish Line: Why do Endurance Runners Collapse? Implications for Understanding of Mechanisms Underlying Pacing and Fatigue.

[9] Gregory S. Roebuck, Donna M. Urquhart, Xianwei Che, Laura Knox, Paul B. Fitzgerald, Flavia M. Cicuttini, Stuart Lee, Rebecca Segrave & Bernadette M. Fitzgibbon (2020). Psychological characteristics associated with ultra-marathon running: An exploratory self-report and psychophysiological study, *Australian Journal of Psychology*, 72:3, 235–247, DOI: 10.1111/ajpy.12287

[10] Hanson, Nicholas; Madaras, Lindsay; Dicke, Jessica; Buckworth, Janet. Journal of Sport Behavior; Mobile Vol. 38, Iss. 2 (Jun 2015): 180–191. Motivational Differences Between Half, Full and Ultramarathoners

[11] Hoffman, Martin D.; Krouse, Rhonna (2018). Ultra-obligatory running among ultramarathon runners. *Research in Sports Medicine*, 1–11. doi:10.1080/15438627.2018.1431533

[12] Holt, Nicholas L.; Lee, Homan; Kim, Youngoh; Klein, Kyra (2014). Exploring Experiences of Running an Ultramarathon. *The Sport Psychologist*, 28(1), 22–35. doi:10.1123/tsp.2013-0008

[13] Jaeschke, Anna-Marie C.; Sachs, Michael L.; Dieffenbach, Kristen D. (2016). Ultramarathon Runners' Perceptions of Mental Toughness: A Qualitative Inquiry. *The Sport Psychologist*, 30(3), 242–255. doi:10.1123/tsp.2014-0153

[14] Johnson, U., Kenttä, G., Ivarsson, A., Alvmyren, I., & Karlsson, M. (2015). An ultra-runner's experience of physical and emotional challenges during a 10-week continental run. *International Journal of Sport and Exercise Psychology*, 14(1), 72–84.doi:10.1080/1612197x.2015.1035736

[15] Knechtle, B; Nikolaidis, P (2015), Ultra-marathon running. *Dansk Sports Medicine*, 19(4): 6-10.

[16] Krokosz D, Bidzan-Bluma I, Ratkowski W, Li K, Lipowski M. (2020). Changes of Mood and Cognitive Performance before and after a 100 km Nighttime Ultramarathon Run. *International Journal of Environmental Research and Public Health*, 17(22): 8400. https://doi.org/10.3390/ijerph17228400

[17] Lane, Andrew M; Wilson, Mathew. Journal of Science and Medicine in Sport; Belconnen Vol. 14, Iss. 4 (Jul 2011): 358-62. Emotions and trait emotional intelligence among ultra-endurance runners.

[18] Lortie CJ, Walshe A, Darling H, Parker J. 2019. Ten simple rules for better running. PeerJ Preprints 7:e27506v1https://doi.org/10.7287/peerj.preprints.27506v1

[19] Mauvieux, et al. (2022).

[20] McCormick, A., Meijen, C., & Marcora, S. (2018). Effects of a Motivational Self-Talk Intervention for Endurance Athletes Completing an Ultramarathon. *The Sport Psychologist*, 32(1), 42–50. doi:10.1123/tsp.2017-0018

[21] McCormick, Alister; Meijen, Carla; Marcora, Samuele (2015). Psychological Determinants of Whole-Body Endurance Performance. *Sports Medicine*, 45(7), 997–1015. doi:10.1007/s40279-015-0319-6

[22] Miller DJ, Bianchi D, Lastella M. (2022) Running on Empty: Self-Reported Sleep/Wake Behaviour during Ultra-Marathon Events Exceeding 100 Miles. *European Journal of Investigation in Health, Psychology and Education* 12(7): 792-801. https://doi.org/10.3390/ejihpe12070058

[23] Mueller, Thomas S. The ICHPER-SD Journal of Research in Health, Physical Education, Recreation, Sport & Dance; Reston Vol. 7, Iss. 1 (Spring 2012): 17-22. Involvement of ultramarathon runners: Understanding intention, behavior, and perceived skill of the "Absolute Unitary Being"

[24] Portelli, N. (2018). Breaking human limits: Identifying the reasons which compel athletes to run ultra-distances. *Junior College multi-disciplinary conference: Research, practice and collaboration: Breaking Barriers: Annual conference 2018*, Malta, 453–466.

[25] Rochat N., Hauw D., Antonini Philippe R., Crettaz von Roten F., & Seifert L. (2017). Comparison of vitality states of finishers and withdrawers in trail running: An enactive and phenomenological perspective. *PLoS ONE* 12(3): e0173667. https://doi.org/10.1371/journal.pone.0173667

[26] Waśkiewicz Z, Nikolaidis PT, Chalabaev A, Rosemann T, Knechtle B. (2019). Motivation in ultra-marathon runners. *Psychol Res Behav Manag*. 12: 31–37. https://doi.org/10.2147/PRBM.S189061

[27] Watkins, L., Wilson, M., Buscombe, R. (2022) , Examining the diversity of ultra-running motivations and experiences: A reversal theory perspective, *Psychology of Sport and Exercise*, Volume 63, 2022, 102271, ISSN 1469-0292, https://doi.org/10.1016/j.psychsport.2022.102271.

[28] Watkins, Rachel (2017). The Far Reaches of the Mind: Psychological Experiences That Contribute to Willpower and Perseverance of Runners during a 100-Mile Ultramarathon, Alliant International University ProQuest Dissertations Publishing, 2017. 10286341.

[29] Zbigniew Waśkiewicz, Pantelis T Nikolaidis, Aïna Chalabaev, Thomas Rosemann & Beat Knechtle (2019) Motivation in ultra-marathon runners, *Psychology Research and Behavior Management*, 12:, 31-37, DOI: 10.2147/PRBM.S189061

Systematic Literature Review on Adoption of HRM Practices in Selected Banks of Haryana

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Abstract

Purpose: *The purpose of this study was to conduct a systematic literature review on the adoption of HRM practices in Public and Private sector banks of Haryana. The researcher took two Public Sector Banks named SBI, and PNB Bank and two Private Sector Banks named HDFC, and ICICI Bank. The HRM Practices considered in this study are Recruitment and Selection, Training and Development, Reward and Compensation Management System, Performance Appraisal and the region was six Administrative divisions of Haryana, i.e. Rohtak, Gurugram, Hisar, Faridabad, Ambala, and Karnal. These four banks are the leading banks. In this paper, a research survey is conducted to elicit information about Recent HRM practices of selected banks in India. This paper aims to examine HRM practices in the Indian banking industry as they developed in the wake of the new competition brought about by the entry of new private banks and public sector banks as a result of the liberalization process.*

Research Methodology: *Researchers employed the SLR approach for this investigation. This study is descriptive and completely based on secondary data collected through different articles by renowned databases like Scopus, Emerald, Google Scholar, etc. The review procedure seeks to improve already published works.*

Findings: *The results revealed that due to continuous upgrades in HRM Practices and enhancement in the level of knowledge and skills, the efficiency of employees continuously got increased in the banking sector whether in public sector banks or in private sector banks.*

Implications: *The change in the environment and the forces of Globalization and Liberalization have major implications for RBI as well as for managers as by that the skill of using the latest technological developments has been easily learned by the employees which causes a very significant impact on the society.*

Keywords: *HRM Practices, Banking Sector, Recruitment and Selection, Training and Development, Reward and Compensation Management System, Performance Appraisal.*

INTRODUCTION

The banking industry has always been a tool for a country's economic growth, and it plays a crucial role in a growing country like ours. Globally, there is a rapid diversification of banking activity. The banking industry now revolves around technological advancements, and

the Indian banking industry is no exception. Banks must focus on using their human resources effectively for greater growth in order to sustain their standing in the current competitive market. It should foster dedication to enhancing the effectiveness of its human resources and encourage more cohesive teamwork. Therefore, the bank's main concern should be to properly integrate business plans with human resource management strategies.

The level and quality of production in any organization largely rely on the abilities and enthusiasm of its workforce. Therefore, every corporate organization should take the initiative to improve the abilities and knowledge of its personnel for the sake of development and mutual gain. In order to utilize its human resources as effectively as possible and thereby achieve its intended objectives, human resource management (HR) is a crucial procedure for any organization.

For the motivation of its personnel, the banking industry, like all other industrial organizations, heavily relies on the caliber of its HR practices. In order for employees to be competent and productive, an ideal organizational atmosphere must be created via the successful implementation of HR operations. However, financial institutions are able to preserve their position in the competitive climate not just via the application of HR practices but also through periodic assessments.

Emergence of HRM Practices

The establishment of fundamentals must take into account the following in the bank's operations, strategies, and processes: bolstering prudential standards and market discipline; adopting international benchmarks; managing organizational change and consolidation within the financial system; upgrading the financial system's technological infrastructure; and human resource development as the catalyst of the transnational financial system.

The banking industry's human resources division is regarded as one of the processes of discovery and change. Within the context of the cultural business component in the banking industry, the sector of human resources may be characterized as emerging and dynamic. Today's banking industry will mostly rely on its organization's human resources, which are essential to provide the necessary services.

Because people are the industry's greatest asset, attempts to improve management and skill-building come before efforts to improve human resources. The development of specialized abilities and skills for credit assessment and risk management will be a big issue for many institutions. Using information technology is a vital factor in the development of human resources. Due to the complexity of the new business environment and the factors influencing it, specialists will be needed in the HR model of the future to both drive and anticipate change.

HRM Practices in Banking Sector

The primary goal of HR in the banking sector is to support employee performance development. Employee traits including talents, attitudes, and knowledge are crucial in

defining an organization's or an industry's competitiveness. The caliber of human resources reveals a bank's capacity to provide value to clients or customers.

The growth of the Indian banking sector has been a significant economic driver in the country. The new environment presents both possibilities and risks, especially for public sector banks and human resources in a dynamic commercial and economic climate.

Integrating human resource plans with business strategies needs to be the main focus. The best environment for attracting the best talent from the young competitive environment is not one that places seniority over performance above the aspects of recruitment, placement, performance management, rewards, and employee relations in public sector banks. However, one of the several enhancements to HRM in Indian banks is the recruiting practices, along with on-the-job training and redeployment.

According to a survey of the literature, relatively little empirical research has been conducted to investigate this issue. This research tries to close that gap. The paper is structured as follows: the next section describes the objectives of the review and the methodological approach used to conduct the LR. Then, we report the various aspects associated with HRM Practices. Finally, a scope for future research on HRM Practices in Public and Private sector banks of Haryana is suggested. The final section reports the conclusions.

The HRM practices adopted in Banking Sector taken in my study are:

- **Recruitment and Selection:** Recruitment is the process of introducing prospective employees to vacant job positions in any organization. There are various persons applying for vacant job positions as there is a huge scope for the recruitment of suitable candidates. It acts as a linking factor between employees and the organization. Hill and Flippo (1980) said that Recruitment is designed as searching the prospective employees, stimulate them and encourage them to apply for jobs and for those who seek any kind of job. Selection means picking or choosing the right candidate for the job. It is a negative process as it rejects the candidate also. Selection is the process divided into two categories one is those who are offered employment and those who are not (Yoder, 2004).
- **Training and Development:** Training is the process of improving the knowledge, skills of people for a definite purpose. The trainees acquire various types of skills like technical skills, problem-solving skills, etc. As this can provide awareness about the rules, procedures, and methods to guide the behavior of employees. It can improve the performance of employees in their current jobs and also prepare them to take suitable positions in the near future. Training is the systematic development of knowledge, skills, and attitudes required by any individual in order to perform any kind of job or task (Armstrong, 1980). Development is the process that creates growth, progress, positive change, or any physical, economic, and demographic components.
- **Reward and Compensation Management System:** Compensation may be defined as money obtained in work performance and various types of benefits that are provided by employers to employees. It consists of pay, wages, salaries, incentives, and variable payments. Designing an effective payment system helps in attracting, retaining, and

motivating competent and qualified employees as it denotes the process of managing a company's compensation program (Robbins, 1997).

- **Performance Appraisal:** It is a process of evaluating the performance of employees, their behavior, and the progress of employees in the workplace in order to understand the potential of employees for growth and development. It includes both quantitative and qualitative measures and also provides very useful and relevant information for personnel decisions like increments in salary, promotion, demotion, transfer, and termination. It is the systematic and periodic record of employees' excellence in their present job as well as increasing the potential to get a better job (Flippo, 2002).

Banks taken in my Study are:

S. No.	*Public Sector Banks*	*S. No.*	*Private Sector Banks*
1	State Bank of India (SBI)	1	HDFC Bank Limited
2	Punjab National Bank (PNB)	2	ICICI Bank Limited

- **SBI (State Bank of India):** The State Bank of India is India's largest commercial bank and is ranked one of the top five banks worldwide. The Bank is actively involved since 1973 in non-profit activity called Community Services Banking. It offers a wide range of banking services including Personal Banking, Gold Banking, NRI Banking, International Banking, Corporate Banking, Small Business Finance, Rural Banking, and Home Loans. SBI India serves the international needs of its foreign customers, in addition to conducting retail operations. The bank has eight banking subsidiaries in Bikaner and Jaipur, Hyderabad, Indore, Mysore, Patiala, Saurashtra, and Travancore. The bank works towards improving group dynamics and work culture through team building. The bank also has a dedicated facility for the training and development of its employees.
- **PNB (Punjab National Bank):** Punjab National Bank (PNB) is a public sector commercial bank that was established in 1895 in Lahore. It was nationalized in 1969. It offers a wide range of products and services including corporate and personal banking, industrial finance, agricultural finance, financing of trade, and international banking. The Bank's operations are classified into two segments: treasury operations and banking operations. Some of the core values of the bank include customer satisfaction, working on ethical practices, motivated teams, and social economic development. The bank is committed to creating a progressive work culture and encourages employees to deliver better services every day.
- **HDFC Bank:** HDFC Bank is one of India's premier banks providing a wide range of financial products and services to its customers. It was promoted in 1995 by Housing Development Finance Corporation (HDFC). The Bank focuses on training its employees on a continuous basis, both on the job and through training programs conducted by internal and external faculty. The Bank has consistently believed that broader employee ownership of its shares has a positive impact on its performance and employee motivation. The bank's sole focus is on product quality and service excellence. It values integrity, commitment, teamwork, and excellence in customer service.

- **ICICI Bank:** The ICICI Bank was promoted by the Industrial Credit and Investment Corporation of India in 1994 as a wholly-owned subsidiary. The bank has started a unique initiative of industry-academia partnership. It has collaborated with NIIT to set up the Institute of Finance, Banking & Insurance to provide skilled resources to the financial services industry at the entry-level. ICICI Bank's performance and aspirations are underpinned by a strong organizational culture of dynamism, meritocracy, excellence in execution, and high standards of professional integrity that have helped us become an industry leader. The bank runs a leadership development program that aims to build leadership talent within the organization. The program attempts to tap into the potential of employees and develop them into global leaders. It has also extended its role beyond economic growth concerns to directly participate in the pursuit of human development.

THEORETICAL BACKGROUND

Any research effort must include a review of the relevant literature. When choosing the best strategy for any inquiry, it is crucial and helpful to analyze prior work. It looks into the adjustments of research participants. It aids in the researcher's definition of the methodology, which entails the formulation of hypotheses, choice of study variables, and recognition of research gaps. It outlines what has been done and what needs to be done in relation to the current problem.

Welch (2011) observed "The evolution of the employee engagement concept: Communication implications". This paper's goal was to further corporate communication theory by examining the development of employee engagement and the function of communication in boosting it. With a proposed model of the function of internal corporate communication in raising employee engagement, this research addressed a gap in the literature. Links between involvement and communication were examined in the paper, suggesting areas of study for the communication disciplines. The model put out here has a number of practical ramifications since it pushed communicators to think about the possible engagement consequences of communication strategies and methods. The article urged communicators to take their employees' communication requirements into account. This conceptual study offered an overview of the literature on employee engagement and made a unique addition by identifying evolutionary waves in the concept's development.

Bowra (2012) observed the "Impact of human resource practices on employee perceived performance in the banking sector of Pakistan". According to this research, the primary goal of this study was to investigate the nature of the link between employee perceptions of their performance and human resource (HR) practices (pay, performance assessment, and promotion practices) in Pakistan's banking industry. A survey of 235 banking workers was undertaken using a personally administered questionnaire to find out how HR practices affected how well the employees were regarded to be doing. By using Spearman's correlation matrix and multiple regression analysis, the connection and its nature were calculated. The results of Spearman's correlation show a strong and positive link between employee perceptions of

their performance and HR practices. According to the regression results, the two HR practices of performance assessment and promotion were significant, while the practices of pay were not.

Jose (2012) conducted a study on "Satisfaction with HR Practices and Employee Engagement: A Social Exchange Perspective". The topic of employee engagement, which is a major concern in management circles all over the world, was investigated in this research. In India, the idea was becoming more and more important in managerial and intellectual circles. Even though it seems important, there hasn't been much study done to date on what causes employee engagement. This conceptual paper makes an attempt to describe an "engaged employee" as someone who is upbeat, intensely motivated, passionate, and willing to go above and beyond to contribute to sustainable organizational success over the long term. This definition was based on this research. The study hypothesized a link between workers' levels of involvement in the organization and their satisfaction with human resource practices. The notion of social exchange was used to explain this link. The significance of employee engagement and its waning levels throughout the world were also covered in the paper.

Aktar and Pangil (2017) conducted "The Relationship between Employee Engagement, HRM Practices and Perceived Organizational Support: Evidence from Banking Employees". This study set out to look at the connection between employee engagement and HRM practices. The foundation for this study's investigation of the impact of perceived organisational support (POS) on the relationship between HRM practices and employee engagement was based on the social exchange theory (SET) norms. Employees who worked for several private commercial banks in Bangladesh provided survey data. Utilizing the cluster sampling approach, this study employed a sample of 376 employees. SEM and Smart PLS 3.0 software were used in this investigation. This study found that employee engagement was strongly and favorably associated with HRM practices, namely career development, job security, and performance. Additionally, the findings indicated that POS can attenuate the association between HRM procedures and employee engagement. It was predicted that in the presence of POS, employees' engagement levels would increase in response to relatively low levels of employee perceptions of resources associated with their jobs.

Taib et al. (2018) investigated a study on "The Effects of Human Resources Management (HRM) Practices on Employee Performance with the Mediating Role of Employee Engagement." This study looked at how employee engagement played a mediating role in the relationship between human resources management (HRM) practices and employee performance. Data from a survey of the developer property industry's front line to the top-level public sector has been gathered. A stratified sampling strategy was utilized in this study to choose the sample of 318 workers. This study used the Smart PLS 3.0 version of software to examine the data. The outcome showed that employee performance was significantly and favorably influenced by HRM practices, including training and development, remuneration, job stability, and promotion. The outcome also demonstrates that there is a link between HRM procedures and worker performance that may be mediated through employee engagement. In

order to analyze and comprehend the link between HRM practice and employee performance towards employee engagement, this study employed social exchange theory as a framework.

Siddiqui and Sahar (2019) observed in their study "The Impact of Training & Development and Communication on Employee Engagement – A Study of Banking Sector". This study looked into how communication, training, and development affect employee engagement in Karachi's banking industry. 120 employees completed questionnaires, 100 of which were returned with data. Different statistical methods, including confirmatory factor analysis, structural equation modeling, and descriptive statistics, were employed for the analysis. Results indicated that internal communication and training and development had a beneficial effect on engagement.

Vuong and Sid (2020) explored "The impact of human resource management practices on employee engagement and moderating role of gender and marital status: Evidence from the Vietnamese banking industry". Examining how human resource management (HRM) practices affect employee engagement and the moderating effects of gender and marital status were the main objectives of this study. A total of 457 frontline workers from the Vietnamese banking sector participated in the study. The Smart PLS 3.0 program was used to calculate partial least squares structural equation modeling (PLS-SEM), which was used to test the theories. The outcome showed that employee engagement was positively benefited by HRM practices and its four core characteristics (training, rewards and recognition, employee engagement, and information sharing). Additionally, this study offered empirical proof of the moderating effects of married status and gender. It was claimed that married employees undermined the beneficial association between HRM practices and employee engagement whereas male front-line workers strengthened it. Additionally, the results indicated that bank management should create acceptable HRM procedures to boost employee engagement.

Winasis et al. (2020) conducted an examination of the study on "Digital Transformation in the Indonesian Banking Industry: Impact on Employee Engagement". This paper focused on the banking sector's digital transition in Indonesia. In order for businesses to be more adaptable in the quickly changing and expanding industry, the transformation has become a major priority. The changes that took place were profound, upsetting, and extremely dynamic. To ensure that the business can adapt to the competitive environment, it is necessary to fundamentally alter work methods and circumstances that have been operating conventionally for decades. An integrated digital transformation plan must be put into place by the firm in order to improve performance and, as a result, raise the likelihood of a long-term, sustainable business. The modifications had a significant impact on the working environment and human resource practices, as they affected the majority of the company's operations. The effects of the adjustment would have an immediate impact on employees' mental health. Because businesses need the dedication and participation of their employees throughout this period, if this was not managed effectively, it may have a detrimental impact on the changes themselves. In this research, survey findings from a private bank that had been implementing technological improvements for a year were reported.

Kamau et al. (2020) observed "HRM Practices Employee Engagement and Teachers Turnover Intentions: A Cross-Sectional Study from Public Secondary Schools in Kenya". According to this study, workers are crucial to the attainment of organizational goals, and as a result, every business makes an effort to maintain employee retention. The study looked at how employee engagement affected the link between HRM practices and teachers' intentions to leave their positions at Kenya's public secondary schools in Murang'a country. The Social Exchange Theory (SET) served as the study's guiding theory. In Kenya's Murang'a county, the target population consisted of 3752 Teachers Service Commission (TSC) teachers working in 304 public secondary schools. 400 instructors were chosen as the sample size for the study using a multi-stage randomization process. Data were gathered using a self-administered semi-structured questionnaire. Both descriptive and inferential statistics were used to analyze the quantitative data. The results showed that employee engagement somewhat mediates the association between HRM Practices and teacher turnover intentions in Kenya's Murang'a County's public secondary schools.

Tensay and Singh (2020) studied "The Nexus between HRM, employee engagement and organizational performance of federal public service organizations in Ethiopia". Using the AMO Model and SET, this study looked at how the HRM System affected employee engagement and organisational performance. This study investigated how employee engagement affected the relationship between HRM and performance. SEM was used to evaluate the proposed three-factor model on a sample of federal employees working for government agencies. According to the study's findings, there was a strong link between HRM, employee engagement, and organisational performance. Additionally, the relationship between HRM and Performance was somewhat mediated by employee engagement. Regarding the impact of individual HR practices, this study found that they had a favourable and distinctive impact on both engagement and performance, even if their size was less than the total impact of all HR practices. Additionally, autonomy was found to be a key factor in both engagement and productivity.

Saad et al. (2021) observed in their study "Investigating the impact of human resource management practices on employee engagement, and the moderating role of Strategy implementation in Egypt". In the context of Egypt, they looked at how HRM practices affected employee engagement. The goal of this study was to get a thorough knowledge of the ideas underpinning HRM practices, how they affect employee engagement, and how strategy implementation acts as a moderator. By giving questionnaires to 228 personnel of Egypt's banking industry, the quantitative research technique was used to get the answers to the study questions. They found that the idea of employee engagement has drawn the interest of academics and practitioners alike because of its relevance in raising employee productivity, performance, and satisfaction levels.

Parabakaran and Lasi (2021) observed "Human resource management practices and its impact on employee engagement and Performance in an Organization: A Study on labor force in Malaysia". This study examined four factors—learning culture, work empowerment,

reward and recognition, and supervisor support in an organization—that have an influence on employee engagement and performance. This research study's primary goal was to investigate how people perceive human resource management techniques. The association between HRM practices and employee engagement and performance was examined in this article. 150 responders have received the questionnaire, which has been created. There was a strong correlation between the independent and dependent variables, according to calculations made using the data using SPSS statistics and Excel. Regression analysis was also used to assess the outcome. The results showed that all independent factors, including learning culture, work empowerment, incentives and recognition, and supervisor support, had a substantial influence on employees' engagement and performance. This study examined how employee performance and job engagement are impacted by HRM practices.

Soomroo et al. (2021) investigated "Employee Engagement and Personality Attributes as Mediating Role between Green HRM Practices and Employee Green Behaviors". By studying the mediation mechanisms of employee engagement and personality traits between green HRM practices and employee green behavior in the context of essential environmental actions done by organizations, this study sought to move towards sustainability. This study made a contribution to the notion of person-organization fit. This study's design was cross-sectional and quantitative in nature. 384 respondents' main data were gathered. The target demographic for this study was the workforce of the top publicly traded industrial companies in Pakistan, and a deliberate sampling approach was employed. Structural equation modeling was used to accomplish the statistical analysis. The SEM results showed that the association between green HRM and employee green behavior is mediated by employee engagement and personality traits. The importance of person-organization fit in the context of environmental activities was also highlighted by the study. This study aided management in preserving organizational sustainability.

Imran et al. (2021) conducted a study titled "Does E-HRM Advance Employee Engagement? A Study of Commercial Bank Operating in Sukkur and Khairpur District". This study's major goal was to look at how E-HRM (an integral component of green HRM) affected employee engagement among those working in the banking industry. This study concentrated on the effect of electronic human resource management on workers in the banking industry. Two aspects of E-HRM (E-Compensation and E-Performance Appraisal) were polled for this reason using a closed-ended questionnaire. About 300 workers from private banks in the districts of Sukkur and Khairpur made up the sample. Following research using regression analysis, it was shown that among bank workers working in the districts of Sukkur and Khairpur, both e-compensation and e-performance appraisal had a favorable and substantial impact on the working engagement level. For bank decision-makers looking to cut costs and create a welcoming workplace to gain a competitive edge over their competitors, this study has produced some insightful findings.

Iddagoda et al. (2022) examined the paper titled "Employee engagement system: Empirical Evidence from the Sri Lankan banking sector". This study found that employee

involvement fosters a favorable view of the company. A systematic online survey was used to gather information from 200 managers who were chosen at random from Sri Lankan banks. The findings indicated that high-performance practices, religion, and work performance had a moderating effect on employee engagement. The findings of this study contributed fresh perspectives to systems theory and were essential for practitioners and policymakers to boost efficiency in the banking industry.

Porkodi and Jahan (2022) conducted a study titled "The Role of employer branding in employee engagement and employee satisfaction via organization commitment: A case study from the banking sector". This study found that in order to survive in the market today, every company must contend with strong competition. This study examined the relationship between corporate branding and employee engagement. The researcher set out to investigate the relationships between the ideas of employee happiness, organizational commitment, and employer branding. 426 banking personnel from Bangalore, in the Indian state of Karnataka, participated in the study. Confirmatory Factor Analysis, the t-test, and regression analysis were all used to evaluate the proposed model. According to the research, there was a substantial and positive correlation between organisational commitment and employee engagement as well as between employer branding and employee satisfaction, organisational commitment and employee engagement, and employer branding and employee engagement.

Ramanayake et al. (2022) investigated "Mediating role of employee engagement on the relationship between Green HRM and employee job performance: A study of banking sector". The objective of this study was to close the population gap that was identified. The phrase "employee engagement" has gained popularity in the management community. The reason for this was that both employee work performance and organisational financial performance were directly impacted by employee engagement. The unit of analysis was the persons of publicly listed bank management personnel, and the sample size was 58. Cross-sectional research was employed in this study, which was done in a natural setting with little researcher interference. In this study, a mediation relationship between Green Human Resource Management practices and employee job performance was found.

Zamzam et al. (2023) conducted a study on "Human resource management practices and situational leadership on organizational performance; mediated by employee engagement". This study looked at the relationship between HRM practice and organizational performance, the relationship between situational leadership and organizational performance, the relationship between employee involvement and organizational performance, the relationship between HRM practice and employee engagement, the relationship between HRM practice and employee engagement that was mediated by employee involvement, and the relationship between situational leadership and employee engagement. 64 government officials from the Secretariat of the Regional People's Representative Council of Kendari City participated in the study as respondents. The sample size was determined using saturation approaches, and 64 respondents completed questionnaires as part of the research sample. Because the study model was structural, PLS was used to analyze the research data. This study found that situational

leadership has a positive but insignificant impact on organisational performance, employee involvement has a positive and significant impact on organisational performance, employee involvement plays a role in mediating the influence of HRM practice on organizational performance with a full mediation nature, and employee involvement plays a role in mediating the impact of situational leadership on organizational performance.

RESEARCH METHODOLOGY

A systematic literature review is a multi-step process that provides directions to the researchers by identifying their study goal and identifying how to find publications. To create a systematic, transparent, and repeatable technique, this study followed a sequence of steps:

- **Planning the review:** The research topics are fleshed out in this step, as well as the search protocol.
- **Development of the revision:** The set process is followed throughout this phase, and the initial articles are obtained using the traditional criteria.
- **The outcomes of the review:** They are presented in this phase, which includes the outcomes of the search and analysis of the field studies that were chosen. In the Analysis and Discussion section, you'll learn more about this analysis.
- **Journal banks provide the search sources:** Google Scholar.

Table 1: A Summary of the SLR Process

Topics	References
HRM Practices	Singh (2019), Chandani et.al. (2016), Mangaleswaran and Srinivasan, Rai (2012), Haq (2012), Bharti (2015), Maharjan and Sekiguchi (2017), Poornima and Sharmila (2011), Nawaz et al. (2020), Mellacheruvu and Krishnamacharyulu (2008), Kishan (2019), Sabir et al., Reddy and Suresh (2017), Ayari et.al. (2021), Kundu and Malhan (2011), Zamzam et al. (2023), Ramanayake et al. (2022), Imran et al. (2021), Soomroo et al. (2021), Parabakaran and Lasi (2021), Saad et al. (2021), Tensay and Singh (2020), Kamau et al. (2020), Vuong and Sid (2020), Siddiqui and Sahar (2019), Taib et al. (2018), Aktar and Pangil (2017), Jose (2012), Bowra (2012)
Banking Sector	Sawant and Agrawal (2015), Bhatt and Mehta (2013), Dhawan and Verma (2022), Singh and Kumar, Vashistha and Devdutt (2018), Maken and Aggarwal (2021), Nidhi (2015), Porkodi and Jahan (2022), Iddagoda et al. (2022), Winasis et al. (2020)

Table 2

Setting the Research Objective
• To identify the HRM Practices adopted in Banking Sector Literature • To provide suggestions for future research in HRM Practices
↓
Defining the Conceptual Boundaries
• Broad HRM Practices Used in Public and Private Sector Banks of Haryana
↓

Setting the Inclusion Criteria

- Studies that describe the HRM Practices used in the Banking sector of Haryana
- These studies were taken because they provide qualitative data for the research to begin and assess the primary data.

↓

Search Boundaries	*Time Period*	*Search Term: Banking Sector of Haryana*
• No Grey Literature • Top Academic Journals with an interest in HR	2011–2023 (12 years)	Keyword (HRM Practices or HR practices)

↓

Applying Exclusion Criteria

- Articles that do not primarily consider HRM Practices
- Not related to Haryana were also included
- Talk about the performance of Banks
- Those research papers do not provide research methodology, numerical exam (quantitative statistics), and analysis or outcomes.

CONCLUSION

Information technology is an area where human resources development is critical fortunately, Indian professionals are world leaders in this area and the spirit of cooperation and partnership between them in the banking industries will result in a strong and modern financial system comparable to the best in the world. The findings showed that improvements in HRM practices and an increase in knowledge and skill levels led to a constant rise in employee productivity in the banking industry, whether it be in public sector banks or private sector banks.

LIMITATIONS

The researcher only considers selected HRM Practices and two Public Sector Banks and two Private Sector Banks of Haryana District (six Administrative Divisions) this is the limitation of this study due to time constraints. In the future researcher consider other HRM Practices and conducted their study other than Haryana State.

FUTURE RESEARCH DIRECTIONS

This section intends to provide possible avenues for future research on HRM Practices adopted in Banking Sector, based on the main findings of this literature review. It was found in this study that there is a strong need to adopt global best practices in financial sector regulation and supervision and adapt them to the domestic environment. This largely depends on the functioning and policies of public institutions, such as the RBI. There is a need for greater transparency, more effective communication, and a high degree of professionalism in the bank's staff, which are the need of the hour. Incentive structures need to be conceived, supported by appropriate training and motivations, which aligns the employee's goals and orientations with

the core competencies and strategic advantages of the institution. This service sector has to explore the feasibility of entering into collaborative arrangements with universities and other institutions in India and abroad to identify and provide specialized training in the financial services industry with an ongoing flow of emerging training packages.

REFERENCES

[1] Ferguson, A., & Carstairs, J. (2007). Employee engagement: Does it exist, and if so, how does it relate to performance, other constructs and individual differences. *Industrial and Organizational Psychology*, *23*, 133–147.

[2] Mangaleswaran, T., & Srinivasan, P.T. (2010). A Comparative Study of Human Resource Management Practices in Sri Lankan and Indian Public Sector Banks.

[3] Welch, M. (2011). The evolution of the employee engagement concept: Communication implications. *Corporate Communications: An International Journal*, 16(4): 328–346. Available at https://doi.org/10.1108/13563281111186968

[4] Jose. G., Mampilly, S.R. (2012). Satisfaction with HR Practices and Employee Engagement: A Social Exchange Perspective. *Journal of Economics and Behavioral Studies*, 4(7): 423–430. Retrieved on 28 March 2023, 11:02:00.

[5] Bowra, Z.A., Sharif, B., Saeed, A. and Niazi, M.K. (2012). Impact of human resource practices on employee perceived performance in banking sector of Pakistan. *African Journal of Business Management*, 6(1): 323–332. Available at https://doi.org/10.5897/AJBM11.2312 retrieved on 10 April 2023, 12:16:49

[6] Rai, S. (2012). *Human resource management and labour relations in the Indian industrial sector* (No. SP III 2012-301). WZB Discussion Paper.

[7] Bhatt, K.J., & Mehta, T.N. (2013). Effect of HRD climate in private sectors banks at Bhavnagar District. *International Journal of Advance Research in Computer Science and Management Studies*, *1*(7).

[8] Nadeem Iqbal B. (2015). Impact of Rewards and Leadership on the Employee Engagement in Conventional Banking Sector of Southern Punjab. *International Letters of Social and Humanistic Sciences*, Vol. 57: 30–34. Available at 10.18052/www.scipress.com/ILSHS.57.30 retrieved on 4 April 2023, 07:52:14

[9] Shukla, S., Adhikari, B., & Singh, V. (2015). Employee engagement-role of demographic variables and personality factors. *Amity global HRM review*, *5*(9), 65–73.

[10] Pandita, D., & Bedarkar, M. (2015). Factors affecting employee performance: A conceptual study on the drivers of employee engagement. *Prabandhan: Indian Journal of Management*, *8*(7), 29–40.

[11] Gupta, M., Ganguli, S., & Ponnam, A. (2015). Factors affecting employee engagement in India: A study on offshoring of financial services. *The Qualitative Report*, *20*(4), 498–515.

[12] Chandani, A., Mehta, M., Mall, A., & Khokhar, V. (2016). Employee engagement: A review paper on factors affecting employee engagement. *Indian Journal of Science and Technology*, *9*(15), 1–7.

[13] Basbous, O, & Malkawia, E. (2017). The Relationship Between Antecedents of Employee Engagement & Employee Engagement in Banking Sector. *International Business and Management*, 14(2): 70–74. Available at https://doi.org/10.3968/9322 retrieved on 4 April 2023, 07:53:07

[14] Aktar, A., & Pangil, F. (2017). The Relationship between Employee Engagement, HRM practices and Perceived Organizational Support: Evidence from Banking Employees. *International Journal of Human Resource Studies*, 7(3): 1–22. Available at https://doi.org/10.5296/ijhrs.v7i3.11353 retrieved on 4 April 2023, 08:02:00

[15] Taib N.M., Saludin M.N. & Wan Hanafi W.N. (2018). The Effects of Human Resources Management (HRM) Practices on Employee Performance with the Mediating Role of Employee Engagement. *Selangor Business Review*, 3(1): 46–60. Available at 28 March 2023, 11:00:04

[16] Siddiqui. D.A., & Sahar, N.U. (2019). The Impact of Training & Development and Communication on Employee Engagement – A Study of Banking Sector. *Business Management and Strategy*, 10(1): 23–40. Available at https://doi.org/10.5296/bms.v10i1.14592 retrieved on 28 March 2023, 11:03:02

[17] Tensay A.T., & Singh M. (2020). The nexus between HRM, employee engagement and organizational performance of federal public service organizations in Ethiopia. *Heliyon*, pp. 1–15. Available at https://doi.org/10.1016/j.heliyon.2020.e04094 retrieved on 4 April 2023, 07:32:16

[18] Kamau, O.M., Muathe, S.M.A. & Wainaina, L. (2020). HRM Practices Employee Engagement and Teachers Turnover Intentions: A Cross-Sectional Study from Public Secondary Schools in Kenya. *International Journal of Academic Research in Business and Social Sciences*, 10(9): 257–271. Available at http://dx.doi.org/10.6007/IJARBSS/v10-i9/7726 retrieved on 4 April 2023, 07:15:59

[19] Vuonga. B.N., Sid. S. (2020). The impact of human resource management practices on employee engagement and moderating role of gender and marital status: An evidence from the Vietnamese banking industry. *Management Science Letters*, pp. 1633–1648.

[20] Winasis. S., Djumarnob, Riyantoc S. & Ariyantod, E. (2020). Digital Transformation in the Indonesian Banking Industry: Impact on Employee Engagement. *International Journal of Innovation, Creativity and Change*, 12(4): 528-543. Available at www.ijicc.net retrieved on 28 March 2023, 10:58:47

[21] Singh, A. (2020). Review of Literature on HR Practices in Indian Banking Sector. Access mode: https://www.semantic scholar.org/paper/Review-of-Literature-on-HR-Practices-in-Indian-Singh/0bbf367ee8cea83109819588a3c18af1b1b48092- accessed, 30.

[22] Saad, M.M., Gaber, H.R., and Labib, A.A. (2021). Investigating the impact of human resource management practices on employee engagement and the moderating role of strategy implementation in Egypt. *SA Journal of Human Resource Management*, 19(0): 1–9. Available at https://doi.org/10.4102/sajhrm.

[23] Parabakarana, D., & Lasib, M.A. (2021). Human resource management practices and its impact on employee engagement and performance in an organisation: A study of labour force in Malaysia. *Malaysian E Commerce Journal (MECJ)*, 4(1): 29–35. Available at http://doi.org/10.26480/mecj.01.2021.29.35 retrieved on 4 April 2023, 07:20:41

[24] Soomroo, F.A., Azhar, S., Aleem, M. & Haqqani, K. (2021). Employee Engagement and Personality Attributes as Mediating Role between Green HRM Practices and Employee Green Behaviors. *Linguistica Antverpiensia*, pp. 5964–5985. Available at www.hivt.be retrieved on 4 April 2023, 07:37:16

[25] Imran, M, Memon, A.W., Talreja, K. and Bhutto, S.A. (2021). Does E-HRM Advance Employee Engagement? A Study of Commercial Bank operating in Sukkur and Khairpur District. *Indian Journal of Economics and Business*, 20(4): 889–903. Available at http://www.ashwinanokha.com/IJEB.php retrieved on 4 April 2023, 07:56:37

[26] Ranga, P. (2021). Impact of Employee Engagement Factors on Job Satisfaction in Employees Working in Five-Star Hotels in Haryana.

[27] Iddagoda A., Dissanayake H. & Ranasinghe L. (2022). Employee engagement system: Empirical evidence from the Srilankan banking sector. *Three Seas Economic Journal*, 3(1): 1–11. Available at https://doi.org/10.30525/2661-5150/2022-1-1 retrieved on 4 April 2023, 08:07:12

[28] Ramanayake M.N., Gurugamage S.R., Iddagoda A. & Dissanayake D.H.S.W. (2022). Mediating role of employee engagement on the relationship between Green HRM and employee job performance: a study of banking sector. *Academy of Management*, 3(4): 155–170. Available at https://www.researchgate.net/publication/365273690 retrieved on 4 April 2023, 8:12:55

[29] Kavyashree M.B., Kulenur S., Nagesh, P. & Nanjundeswaraswamy T.S. (2022). Relationship between Human Resource Management Practices and Employee Engagement. *Brazilian Journal of Operations and Production Management*, 20(1): 1–15. Available at https://doi.org/10.14488/BJOPM.1331.2023 retrieved on 4 April 2023, 08:07:58

[30] Abeysuriya I, & Gamage P.N. (2022). Job related factors affecting employee engagement: Evidence from private sector commercial banks in Colombo district in Srilanka. *HRM Perspectives*, pp. 125–156. Available at https://www.researchgate.net/publication/363272757 retrieved on 4 April 2023, 07:53:23

[31] Akter, H., Ahmed W., Sentosa I., & Hizam, S.M. (2022). Crafting employee engagement through talent management practices in telecom sector. *SA Journal of Human Resource Management*, 20(0): 1–11. Available at https://doi.org/10.4102/sajhrm.v20i0.1775 retrieved on 4 April 2023, 07:48:05

[32] Porkodi S. & Jahan U. (2022). The role of employer branding in employee engagement and employee satisfaction via organisation commitment: A case study from the banking sector. *Advances and Applications in Mathematical Sciences*, 21(8): 4493–4514. Available at https://www.researchgate.net/publication/361756527 retrieved on 4 April 2023, 07:02:41

[33] Zamzam S., Samdin S., Mahrani S., Syaifuddin D.T., Suleman N.R., Masri M. & Zaludin Z. (2023). Human resource management practices and situational leadership on organizational performance; mediated by employee engagement. *World Journal of Advanced Research and Reviews*, 17(3): 632–643. Available at https://doi.org/10.30574/wjarr.2023.17.3.0410 retrieved on 4 April 2023, 07:40:56

A Study of Quality of Work-Life and Work-Life Balance

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Abstarct

This study aims to synthesise the various literature that already exists on the quality of work-life and work-from-home arrangements and to identify potential directions for future research in this area. The report does a thorough analysis of empirical and conceptual research on the quality of work-life and working from home from various journals and academic papers in the related field. The study produced contradictory and inconsistent results. Work-from-home arrangements have both positive and negative impacts on the quality of work-life, productivity as well as work-life balance.

Keywords: *Quality of Work-Life, Work from Home, Remote Working, Work-Life Balance, Flexible Work Arrangements and Productivity.*

OBJECTIVES OF THE STUDY

The objectives of the study are:

- To determine the effect of work-from-home arrangements on the quality of work life.
- To assess the relationship between working from home and the productivity of employees.
- To ascertain the impact of working from home on work-life balance.

INTRODUCTION

Working from home is broadly defined as any paid labour that is done largely from home (at least 20 hours per week) (Felstead & Jewson, 2000). Hence, this wide term includes those working from home, whether they are hired or self-employed (Felstead and Jewson, 2000). Home-based work, often known as telework, is becoming more prevalent in businesses all over the world (Allen et al., 2015; Greer and Payne, 2014). As a result of shifting family patterns, rising female employment, and technology advancements (such as mobile phones and portable laptops) that allow work to be done in a variety of settings, the line between work and home has become hazier. (Hill, Miller, Weiner, & Colihan, 1998). Technology advancements, which enable business to be conducted outside of the designated office area and frequently at significantly reduced costs, are another factor influencing the trends towards flexible working patterns (*The Observer*, 2002). Technology has an impact on the trends towards flexible work schedules. Working at 3 am and on holidays has become standard practice due

to advancements that allow the business to be conducted outside of the designated office area and frequently at significantly lower prices (*The Observer*, 2002). Investigations on how distant work affects work-life balance have yielded conflicting results, indicating that remote work can have both positive and negative effects (Sullivan & Lewis, 2006). Recent studies have highlighted several benefits of working from home, including familiarity and comfort, flexibility, self-management, peace and undisturbed work, lack of travel, and time spent with the kids (Daniels et al., 2000; Royal College of Art, 1999). Studies from the sociological or management literature do support the idea that having more control over one's schedule and location can boost job satisfaction (Kroll and Nuesch, 2017; De Menezes and Kelliher, 2017; Wheatley, 2017). According to several surveys, remote workers believe that working from home has increased their productivity. For instance, a comprehensive study of home-based teleworkers revealed that the majority believed telework had a specific effect on improving their job performance (Major, Verive, & Joice, 2008). Bailey and Kurland (2002) arrived at the opinion that although many studies show that teleworkers perceive their productivity to have increased, claims of increased productivity are erroneous because much of the evidence comes from self-reported data, studies typically do not show long-term effects, and more productive workers may have more opportunities to engage in remote work. Working from home can make it more difficult to juggle work and family obligations (Bulos and Chaker, 1995; Olson and Primps, 1984; Crossen, 1990; Foegen, 1993; Gottlieb et al., 1998; Madigan et al., 1990; Royal College of Art, 1999; Sullivan, 2000). group. The importance of social interactions at work has also been noted (Albertson, 1978; Jahoda, 1979; Locke, 1976) as one of the primary factors influencing job satisfaction. Working from home reduces social interactions, as Olson (1981) found in two experimental settings, and this is likely to hurt the standard of living at work. Maintaining an adequate equilibrium between work and the rest of our everyday life is an emerging issue. It has surfaced amid increasing concerns about recent demographic shifts that are significantly affecting the gender and age of the workforce (European Commission, 2002).

Working from Home Benefits and Drawbacks

Working from home has both advantages and disadvantages:

Benefits for Employers

1. Compared to the traditional working style, WFH can increase production (Fonner and Roloff, 2010; Golden and Veiga, 2008; Bloom et al., 2014).
2. Decreasing the rate of turnover (Stavrou et al., 2010; Bloom et al., 2014)
3. Organizational cost reduction (Choudhury et al., 2018)
4. Due to WFH's freedom from regional constraints, employers will have access to a bigger talent pool.

Benefit for Employees

1. It cuts down on commute time. This is crucial in the Indian setting, where commute time accounts for 7% of daily time spent by citizens (Tremblay and Thomsin, 2012)

2. Lower travel and related expenses (Morgan, 2004).
3. A better work-life balance and reduced levels of stress among employees (Fonner and Roloff, 2010; Bloom et al., 2014)
4. Individuals will have more autonomy (Harpaz, 2002)
5. More time spent with family and enjoying leisure activities (Ammons and Markham, 2004; Johnson et al., 2007)
6. Enhanced job satisfaction (Pratt, 1999; Gurstein, 2001)
7. Lessened workplace distractions (Golden and Veiga, 2008)

Advantage for Society

1. Air pollution is lessened as a result (Handy and Mokhtarian, 1996). Given that India is home to 21 of the world's 30 most polluted cities, it is especially significant in that country and a significant portion of it is caused by vehicles.
2. Less traffic congestion is a welcome improvement for Indian roadways, which are infamously overcrowded. The average travel time to work is the longest in the world in several of its main cities.

Concern for Employers

1. Data security, infringement on intellectual property rights, and cyber security risks are among the top worries for employers in the businesses contemplating WFH arrangements.
2. In the case of a WFH setup, measuring productivity and performance management would also alter. The common belief among managers is that assessment and providing constructive feedback will be significantly impeded if they are unable to directly monitor their subordinates as they work (Kurland & Bailey, 1999). Therefore, businesses must invest in their managers to provide them with the tools they need to evaluate employee performance and provide feedback. Although this may initially increase costs for the organizations, in the long run, it will encourage growth, increased productivity, and greater involvement.
3. Face-to-face meetings are crucial for the development of new ideas and maintaining staff motivation and attention, according to Nicholas Bloom's pioneering study. These factors include trust, synergy, innovation, and problem-solving. 2013's (Bloom et al)
4. The induction process will be difficult for new hires.
5. The same system, computers, etc. are used by business process management (BPM) companies during several shifts. In the case of WFH, this will not be feasible. Costs will rise as a result of this.

Concern for Employees

1. Internet access issues and power outages are a concern for the staff. Problems involving Female Employees in India In-laws, ill relatives,
2. Household duties require more focus.
3. Controlling a younger child: For parents of small children, controlling their children may be the most difficult part of working from home.

4. Difficulty separating home time from work time.
5. Loneliness, anxiety, and sadness brought on by social exclusion.

Societal Concern

1. Domestic abuse: Even though WFH offers tremendous opportunities for women to enter the profession, there is an increase in domestic violence instances when doing so at home.
2. Greater isolation: One drawback of working from home is that social connections between coworkers are lost, and remaining inside can make many people's mental health problems worse.

METHODOLOGY

The Descriptive method has been used in this study. Reviews on work from home and quality of work life have been conducted by the researcher. The search was conducted using various keywords such as quality of work life, work from home, productivity, work-life balance and flexible work arrangements. Various search engines such as google scholar, ResearchGate, academia and open-access publishers of journals and academic papers such as Sage and Emerald have been thoroughly examined by the researcher.

LITERATURE REVIEW

Authors	*About Study*	*Objectives*	*Variables Taken in this Present Study*	*Methodology*	*Findings*
"Susanne Tietze and Gillian Musson"	Susanne Tietze et al. (2002), attempted to study "working from home in the context of Temporal flexibility as lived experience"	The objective of the study was to investigate how temporal flexibility affects professional workers' everyday activities and how it transforms into experience.		Data from 25 professional management employees who worked from home were collected by conducting interviews with the employees in their homes.	The article's conclusion expresses the opinion that these innovative work organization models are neither bad nor they give employees unrestricted control over how their jobs are carried out. Instead, they changed the dynamic between "home" and "work," requiring the person to interact with both domains thoughtfully.

Authors	*About Study*	*Objectives*	*Variables Taken in this Present Study*	*Methodology*	*Findings*
"Maria C. W. Peeters; Anthony J. Montgomery; Arnold B. Bakker and Wilmar B. Schaufeli"	Maria C. W. Peeters et al (2005) attempted to study "How Job and Home Demands Are Related to Burnout: Balancing Work and Home"	The main focus of the study was to differentiate between spheres of work from home in the context of burnout	To present a combined research model, the researcher in this study took the variables "job demand, home demand and burnout"	Data was collected from 1,264 using the questionnaire method	The study found that both work and home pressures have a direct impact on burnout.
Christine A. Grant; Louise M. Wallace; Peter C. Spurgeon	Christine A. Grant et al (2013) attempted to explore "psychological influences on remote workers jobs efficiency, wellbeing, and a healthy work-life balance"	The objective of the study is to investigate how remote e-working affects important areas of inquiry, such as work-life balance, job performance, and well-being.		11 participants based in the UK were chosen from five different organisations in the corporate, public, and nonprofit sectors for the interview.	Due to a lack of downtime for rest and excessive workload, negative effects on well-being were discovered. The effectiveness of e-workers was found to be significantly influenced by management style and trust.
"Joni Delanoeije; Marijke Verbruggen; Lynn Germeys"	Joni Delanoeije et al. (2019) attempted to explore "The impacts of home-based telework on work-to-home conflict and home-to-work conflict is explained using the concept of boundary role changes.	The objective of the study was to assess the impact of teleworking on the everyday conflict between work and home and the daily conflict between work and home		Daily diary data were collected by Flemish employees who had parental responsibilities since they face unique work challenges	The study found that on teleworking days home-to-work conflict was more as compared to non-teleworking days, but overall work-to-home conflict was found to be less. Since daily role transitions and daily work-home conflict were measured at the

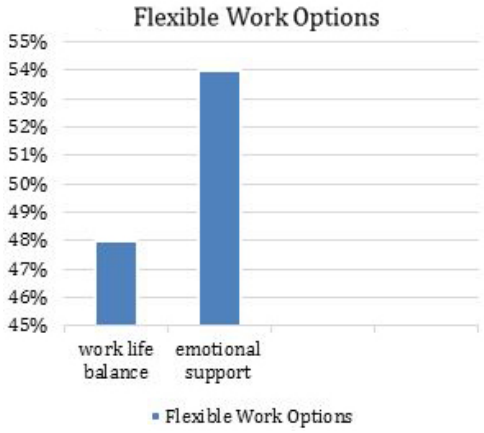
Authors	*About Study*	*Objectives*	*Variables Taken in this Present Study*	*Methodology*	*Findings*
					same measurement moment, it is difficult to infer directionality or causality from these results
"Abigail Powell; Lyn Craig"	Abigail Powell et al (2015) attempted to explain "The effects of remote work and its effects on collaboration among information workers evidence from Australia"	The focus of the investigation was to assess the relationship between working from home, gender and time use concerning the time utilised for paid work, unpaid work and leisure pursuits		The data was from the 2589 employees aged between 15 to 64 years using secondary sources of data.	The findings show that there is a relationship between time spent working for pay and time working for free and that this relationship varies depending on gender and the frequency of working from home. Even though it may help women in making a balance between work and family, working from home does not provide them with additional time for leisure activities.
Bonnie Dowling, Drew Goldstein, Michael Park, and Holly Price	Bonnie Dowling et al (2022) attempted to assess "Hybrid work culture in the context of diversity, equity, and inclusion strategy"	The objective of the study was to determine why hybrid work arrangements are appealing to empowered workers.		For data collection, 1345 respondents were surveyed across three continents namely North America, Europe and Australia	The study shows that employees with impairment are more likely to support a hybrid work paradigm; employees with non-binary identities were more inclined to hybrid work arrangements than both men and women

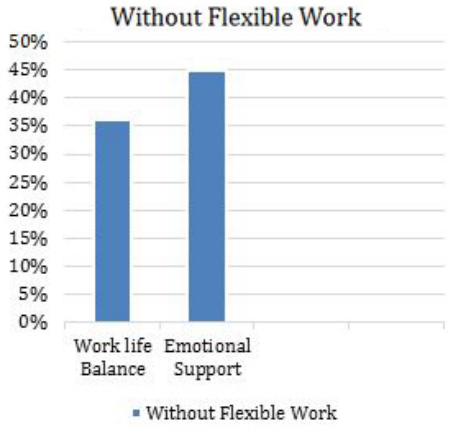
Authors	*About Study*	*Objectives*	*Variables Taken in this Present Study*	*Methodology*	*Findings*
Boas Shamir, Ilan Salomon	Boas Shamir et(1985) al attempted to explore "the effects of working from home on an employee's quality of life at work.	The objective of the study is to analyse the possibility of working from home in the context of current theories and knowledge about organizational behaviour and the quality of the working environment.	The researcher in the study took Moderating variables such as job level, gender, flexible option, type of leadership required by the situation and type of role.	Discussions of numerous key features of quality of work life and differences between working from home and working at the office and speculations about the possible consequences.	The study found that only under specific circumstances such as flexitime, decentralization, satellite commuting and neighbourhood work centre may it increase the quality of working life,
Alan Felstead, Nick Jewson, Annie Phizacklea, Sally Walters	Alan Felstead (2002) attempted to explore "Opportunities to work at home in the context of work-life balance"	The objective of the study is to analyse work-from-home arrangements and apply the conceptual framework to explain the emergence of work-life balance		Twelve hypotheses were studied using management data from the 1998 workplace employee relation survey, WERS 98.	The study found that working from home is more likely to be a possibility in the public sector, in large organisations, and in settings where employees are in charge of the calibre of their production.
Alladi Venkatesh, Nicholas P. Vitalari	Alladi Venkatesh et al (1992) attempted to study "an exploration of computer-based supplemental work at home"	The objective of the study is to investigate how information technology affects the completion of additional work at home.		The data was gathered from 450 US households and a subset from the large national-level panel of 907 households using the questionnaire method.	The study found that Job self-determination factors such as flexibility and control, job tasks and time spent on supplementary work are positively associated.

Authors	*About Study*	*Objectives*	*Variables Taken in this Present Study*	*Methodology*	*Findings*
"Melanie Arntz, Sarra Ben Yahmed and Francesco Berlingieri"	Melanie Arntz et al (2019) attempt to explore, "the effects of Working from home on several hours worked and wages"	The objective of the study was to study the impact of Work from home arrangements on working status and degree of satisfaction.			The study found that childless workers indicate more satisfaction after adopting work from-home. Working from home reduces the hour difference and gender wage among the parents.

Work from Home and Work-Life Balance

FlexJobs discovered that respondents with flexible work arrangements (including remote employment) report higher mental health in a survey with Mental Health America. The likelihood of having poor or very bad mental health is roughly two times higher for workers without access to flexible work arrangements:





Work From Home and Productivity

Many theories have been put up on how productive employees are when working remotely.

- Working from home boosts productivity by 13%, according to a Standford study of 16,000 employees over 9 months. This improvement in efficiency was brought on by more calls per minute, which was attributable to a more comfortable and quiet working environment, and by working longer shifts with fewer breaks and sick days. Employees reported greater job satisfaction in the same study, and attrition rates were reduced by 50%.

- According to a Flexjobs poll, 2100 people continued to work from home following the epidemic. 51% of respondents claimed that the new work environment is more productive. (Flexjobs)
- 83% of employers who allowed remote workers said that the change has benefited their companies. Employee satisfaction with productivity while working remotely is at 81%, according to PWC. (GitLab)
- According to a ConnectSolutions poll, 77% of those who work remotely at least occasionally report higher productivity, with 30% producing more work in less time and 24% producing more work in the same amount of time
- According to 55% of the professionals questioned by Owl Labs, working remotely required more hours than working in an office. The Owl Labs
- 53% of the companies reported that since their workers started working remotely, their productivity has increased. (PWC)

FINDINGS AND CONCLUSION

Even though there are still many unresolved problems in this field, it is evident that working from home could offer solutions for achieving a work-life balance in some situations. Working conditions have changed over the past two decades allowing for more flexibility for where and when to work. It is not immediately obvious whether this supports businesses' requirements to increase a worker's availability outside of the firm's location and outside of regular business hours or primarily serves employees' requirements to balance their personal and professional lives. Neither is how much impact work from home has on productivity. There is relatively little research on how working from home affects careers and how it varies with workers' qualities, even though it has gained popularity over the past two decades.

The core components of Quality of work-life—work-life balance, effective work, and gender equity—are crucial for ethical organizational practice. Organizations must adhere to high ethical standards in each category since failing in one area will negate any gains made in terms of quality of life and well-being in the other areas. Another publication and subsequent research project are needed to develop this idea.

LIMITATIONS

The study lacks experimental investigation. Primary data may provide in-depth information; however, the current study works on secondary data. Further generalizability testing is necessary for the research because of its exploratory character and methodology.

REFERENCES

[1] Ammons, S.K., & Markham, W.T. (2004). Working at home: Experiences of skilled white collar workers. *Sociological Spectrum*, 24(2), 191–238.

[2] Arntz, M., Ben Yahmed, S., & Berlingieri, F. (2020). Working from home and COVID-19: The chances and risks for gender gaps. *Intereconomics*, 55, 381–386.

[3] Bailey, D.E., & Kurland, N.B. (2002). A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 23(4), 383–400.

[4] Delanoeije, J., Verbruggen, M., & Germeys, L. (2019). Boundary role transitions: A day-to-day approach to explain the effects of home-based telework on work-to-home conflict and home-to-work conflict. *Human relations*, 72(12), 1843–1868.

[5] Dowling, B., Goldstein, D., Park, M., & Price, H. (2022). Hybrid work: Making it fit with your diversity, equity, and inclusion strategy. *The McKinsey Quarterly*.

[6] Felstead, A., & Jewson, N. (2000). In work, at home: Towards an understanding of homeworking. Psychology Press.

[7] Felstead, A., Jewson, N., Phizacklea, A., & Walters, S. (2002). Opportunities to work at home in the context of work-life balance. *Human resource management journal*, 12(1), 54–76.

[8] Grant, C.A., Wallace, L.M., & Spurgeon, P.C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, 35(5), 527–546.

[9] Grelle, D., & Popp, E. (2021). Considering the interaction of individual differences and remote work contexts. *Industrial and Organizational Psychology*, 14(1-2), 244–247.

[10] Harpaz, I. (2002). Advantages and disadvantages of telecommuting for the individual, organization and society. *Work study*, 51(2), 74–80.

[11] Hill, E.J., Miller, B.C., Weiner, S.P., & Colihan, J. (1998). Influences of the virtual office on aspects of work and work/life balance. *Personnel psychology*, 51(3), 667–683.

[12] Nakrošienė, A., Bučiūnienė, I., & Goštautaitė, B. (2019). Working from home: characteristics and outcomes of telework. *International journal of manpower*, 40(1), 87–101.

[13] Peeters, M.C., Montgomery, A.J., Bakker, A.B., & Schaufeli, W.B. (2005). Balancing work and home: How job and home demands are related to burnout. *International journal of stress management*, 12(1), 43.

[14] Powell, A., & Craig, L. (2015). Gender differences in working at home and time use patterns: Evidence from Australia. *Work, employment and society*, 29(4), 571–589.

[15] Shamir, B., & Salomon, I. (1985). Work-at-home and the quality of working life. *Academy of Management Review*, 10(3), 455–464.

[16] Sullivan, C., & Lewis, S. (2006). Work at home and the work-family interface. *Work-life balance: A psychological perspective*, 143–162.

[17] Tietze, S., & Musson, G. (2002). When 'Work'Meets 'Home' Temporal flexibility as lived experience. *Time & Society*, 11(2-3), 315–334.

[18] Tremblay, D.G., & Thomsin, L. (2012). Telework and mobile working: analysis of its benefits and drawbacks. *International Journal of Work Innovation*, 1(1), 100–113.

[19] Venkatesh, A., & Vitalari, N. P. (1992). An emerging distributed work arrangement: An investigation of computer-based supplemental work at home. *Management Science*, 38(12), 1687–1706.

Green Human Resource Management and Sustainability: A Systematic Literature Review

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Abstract

Environmental concern now becoming the key concern for the organizations because of regulatory authorities' pressure and stakeholder's awareness towards sustainable practices. Green Human Resource Management practices as a part of organization's sustainable practices is becoming popular among the eyes of existing and prospective employees of the organization also drawing attention of academicians and researchers. This study focused on previous literature related to green human resource management (GHRM) and presented a systematic literature review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach. 368 studies were identified from the Scopus database related to GHRM and sustainability for the study. Thirty-eight articles were finally considered appropriate for systematic review after passing from inclusion and exclusion criteria. Bibliometric description was given for the identified literature followed by systematic review. Based on systematic literature review, this research identified four key themes: Sustainable resource utilization; Green creativity; Organizational attractiveness and environmental sustainability. Implications and future research directions were suggested at the end of the study.

Keywords: *Green Human Resource Management, Sustainability, SLR, PRISMA.*

INTRODUCTION

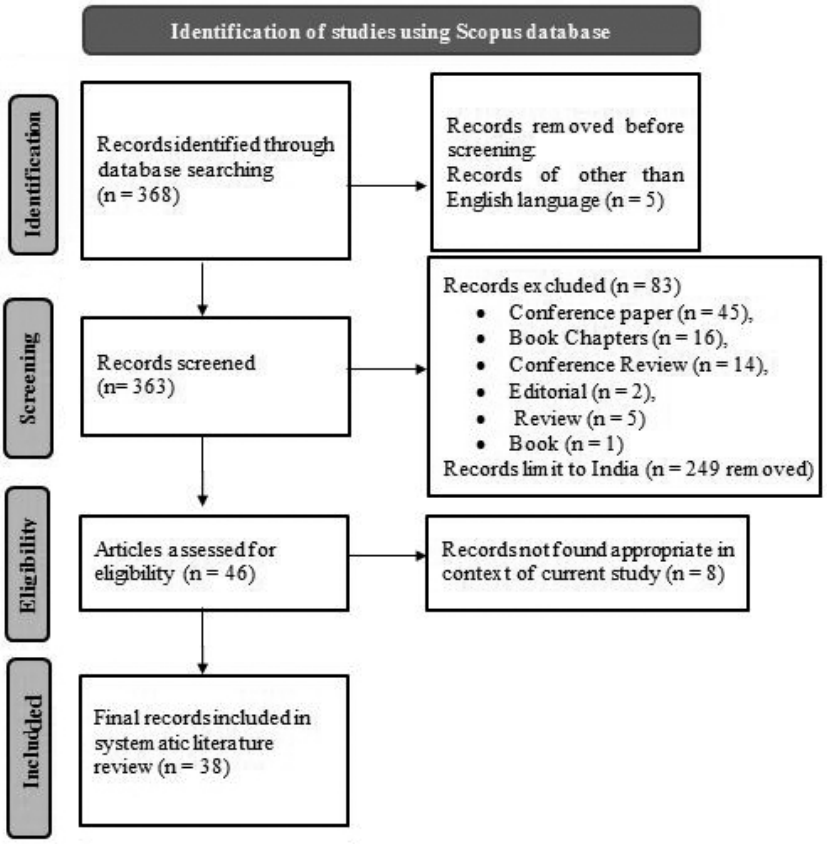
Green practices are essential for improving living quality and protecting our ecosystem. As social awareness among public increases about the requirement of green solutions of organizations' problems for minimizing the adverse impact of business on environment. The organizations and industries focusing on adopting green initiatives for sustainable development of economy. Not only customers concerned about adoption of green products and raising demand from organizations but also prospective employees also assess organization's attractiveness on the basis of green HRM practices adopted by that organizations (Chaudhary, 2021). Gen. Y employees were found more inclined towards green practices and assess the degree of GHRM practices adoption before joining there (Jain and D'lima, 2018). Prospective employees job pursuit intention significantly depends upon the green human resource management practices as it improves the organizational prestige (Chaudhary, 2018, Chaudhary 2019).

Green HRM practices shows the environment concern and focuses on developing a green work environment that encourages workers to perform their task in most environmentally friendly manner. GHRM refers to the usage of HRM policies for the sustainable use of resources and lead to environmental sustainability. GHRM involved mainly environment- friendly HR practices and preservation of knowledge capital (Mandip, 2012). GHRM practices grouped under green recruitment and selection, green training and development, green performance management, green compensation and rewards and green employee involvement (Chaudhary, 2021).

Green Human Resource Management gaining recognition for attracting prospective employees (Chaudhary, 2018; 2021), increasing organizational prestige (Chaudhary 2019), organizational effectiveness (Muduli et al., 2020), environmental sustainability (Rizvi and Garg, 2021). This study through systematic review of literature tried to identify the role GHRM for sustainable development of economy and organizational effectiveness.

METHODS

This research aims to present the literature of GHRM in a systematic way and recognizing the key contribution of GHRM for organization and environment. For attaining the goal of



the study, Scopus database was referred for record identification. 368 records were identified initially by putting "Green Human Resource" OR "Green Human Resource Management" OR GHRM OR "Green HRM" AND "Organizational Performance" OR "Sustainable Development" OR "Sustainability" searching terms.

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach based on four steps: Identification, Screening, Eligibility and Included (figure 1) was adopted for selection of final records for systematic review. Five records of other than English language was removed at initial stage and 363 records were transferred at screening stage. Under screening stage exclusion and inclusion criteria was followed. This systematic review included only articles with limit to India only. Sixty-eight records were fall other than article category and excluded from the study. Remaining 295 articles were further filtered under "limit to India" category and 249 articles removed here. Only 46 articles transferred under eligibility stage where eight records were removed by researcher as didn't found appropriate in context of current study. Thus, thirty-eight articles were included in systematic review (Table 1).

After identifying articles for systematic review description of literature on the basis of year and citation was presented through charts. Literature was presented by both ways: author centric (Review summary table) and content centric (Content analysis).

DESCRIPTION OF LITERATURE

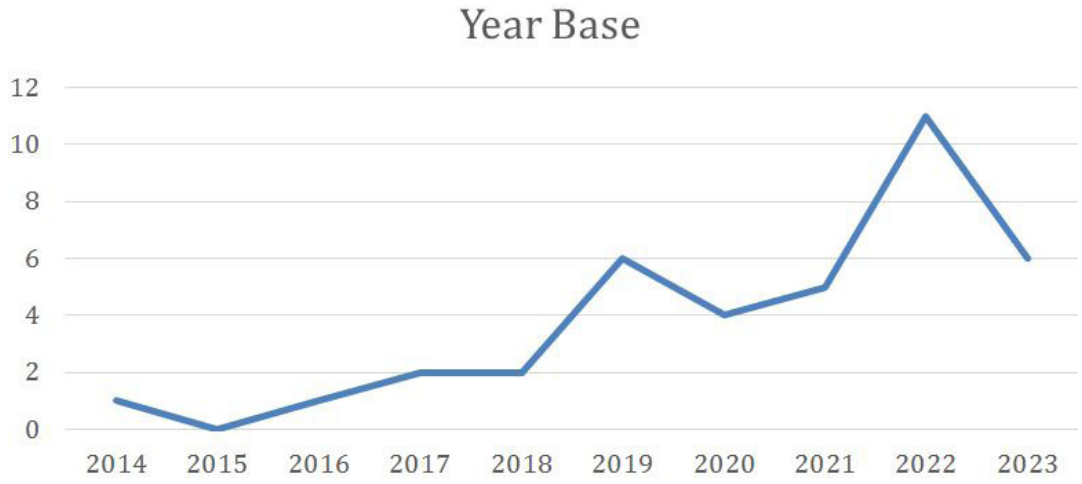


Chart 1: Year Base

Source: Secondary data (Scopus database)

Above chart 1 of year base presented the number of publications related to search term mentioned in methods section. Chart showed that none of the study included in systematic review published in year 2015. The first study included in review was published in year 2014. Maximum studies (11 articles) included in review were published in year 2022. Six articles included in this systematic review were published in year 2023 (January–June).

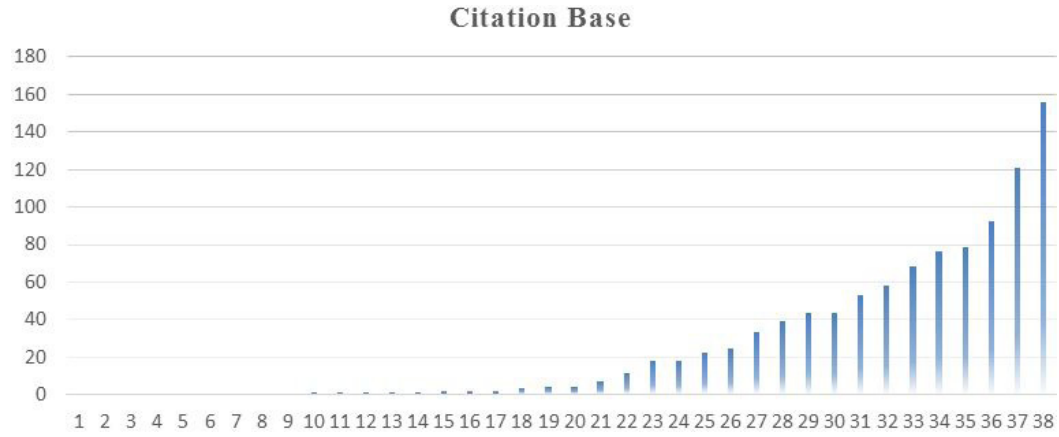


Chart 2: Citation Base

Source: Secondary data (Scopus database)

Chart 2 of citation represented that the most cited article (156 times) titled "Green Human Resource Management and Employee Green Behavior: An Empirical Analysis" was authored by Chaudhary (2020) and published in Journal of Corporate Social Responsibility and Environmental Management. Second most cited article included in the study was authored by Mishra (2017) and titled "Green human resource management: A framework for sustainable organizational development in an emerging economy". This article was published in "International Journal of Organizational Analysis". Bhardwaj (2016) article "Role of green policy on sustainable supply chain management: A model for implementing corporate social responsibility (CSR)" was found third most cited article with citation 92 citation. Fourth article got 78 citation and fifth article was cited 76 times.

LITERATURE ANALYSIS AND FINDINGS

Initially author centric analysis of literature was done followed by content analysis. Below table 1 presented the summary of articles included in the study by following author centric approach.

Table 1: Summary of Literature Review

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Mishra et al. (2014)	Green HRM: Innovative approach in Indian public Enterprises	76	Quantitative	The purpose of the paper is to elaborate the need of GHRM initiatives as an innovative approach in central public sector enterprises (CPSEs).	The paper identified the best practices in GHRM that can be applied in central public sector enterprises (CPSEs) in India to contribute to sustainable development.

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Sriram and Suba (2017)	Impact of green human resource management (G-HRM) practices over organization effectiveness	3	Qualitative	This study aims to identify the impact of green HRM practices for organizational effectiveness	Results of the study highlighted that G-HRM practices helps business for making better profit range and avoids wastage of corporate resources by following the Ecological principles.
Mishra (2017)	Green human resource management: A framework for sustainable organizational development in an emerging economy	121	Mixed approach (Qualitative and case study)	The purpose of this study is to explore the status and challenges of green human resource management practices in India	There is further scope to utilize the full potential of GHRM practices for encouraging pro-environmental behavior in the organizations. Study also revealed that top-management support and mutual learning among departments are crucial to facilitate green behaviors among employees.
Chaudhary (2018)	Can green human resource management attract young talent? An empirical analysis	39	Hierarchical linear regression analysis	The purpose of this paper is to examine the effect of perceived green human resource management (GHRM) on job pursuit intention (JPI) of prospective employees by proposing organizational prestige (OP) as mediator and environmental orientation (EO) and gender as moderators.	GHRM was found to relate significantly with JPI of prospective applicants and OP mediated the above linkage. EO was found to significantly moderate the association of GHRM with JPI. However, gender failed to add to the understanding of the above relationship.

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Jain and D'lima (2018)	Green HRM – a study on the perception of Generation Y as prospective internal customers	18	Qualitative	To study the perspective of Gen. Y towards green practices.	Gen Y's perception about the organisations depend upon practising green hiring practices, performance management and reward and recognition.
Chaudhary (2019)	Green human resource management and job pursuit intention: Examining the underlying processes	43	Quantitative Empirical research	To study the relationship of green human resource management (GHRM) with job pursuit intention (JPI) of potential applicants with sequential mediation through organizational prestige (OP) and organizational attractiveness (OA).	GHRM significantly impacted on job pursuit intention. OP and OA sequentially mediated the effect of GHRM on JPI
Vijaykarthigeyan and Giriprakash (2019)	Green HRM practices followed by selected manufacturing industries in Coimbatore	0	Descriptive statistics and ANOVA	To discuss the concept of Green HRM, reviews various studies conducted across globe in the field of Green HRM and analyses the awareness about how the Green HRM has been implemented in the selected manufacturing industries in Coimbatore	Green HRM initiatives taken by companies will result in greater efficiency, lower costs and improved employee engagement and retention, with the help of initiatives taken in different HR processes for improving the sustainable utilization of resources.
Thakur and Mangla (2019)	Change management for sustainability:	68	Fuzzy based Analytic Hierarchy	This paper demonstrated about need and	This study can facilitate managers to employ change

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
	Evaluating the role of human, operational and technological factors in leading Indian firms in home appliances sector		Process and Decision-Making Trial and Evaluation Laboratory techniques	procedures concerned in green HRM in home appliances industry.	management initiatives in adopting sustainability oriented human-operational-technological management practices and delivering the sustainable development goals of responsible consumption and production and affordable and clean energy in industrial supply chains.
Chaudhary (2019)	Green human resource management in Indian automobile industry	43	Quantitative	This paper aimed to examine the status of implementation of green human resource management (GHRM) practices in Indian automobile Industry. Specifically, the level of implementation of five GHRM practices: green recruitment and selection, green training and development, green performance management, green compensation and rewards and green employee involvement was assessed.	The results indicate very low level of implementation of various GHRM practices in the sampled automobile organizations. Among the five GHRM practices, the average score for only green training and development and green employee involvement could reach three. The lowest scores were found for green performance management and green compensation and rewards. Further, all five GHRM practices were found to significantly predict the task-related and voluntary employee green behaviors.

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Raut et al. (2019)	Examining the performance-oriented indicators for implementing green management practices in the Indian Agro sector	78	EFA, CFA, SEM	Hard (operational and technology-based) and soft (human resource based) performance indicators of the green value chain are analysed in the Indian Agro-based industry context.	Research findings revealed that collaborative Green Transportation and Cold storages have a higher influence on operational performance. The present research can assist managers, regulating authorities, and decision makers in understanding the linkage between the green-focused - operational and human resource related factors and business operational performance in Agro food supply context.
Raut et al. (2020)	Analysing green human resource management indicators of automotive service sector	33	MICMAC analysis	The objective of this article is to carry out the driving power and dependency analysis of green human resource management (GHRM) indicators of the automotive service sector to identify the most significant ones.	In the present study, indicators namely Green organisational culture and adoption of green strategy (C5) and Green training and development (C1) were found to be the significant ones, whereas Green employee relations and union-management (C10) was found to be highly dependent on the rest of the indicators.
Chaudhary (2020)	Green Human Resource Management and Employee	156	Empirical Analysis	To understand the role of green human resource management	GHRM was found to significantly predict both task-related and voluntary employee

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
	Green Behavior: An Empirical Analysis			(GHRM) in fostering environmental performance of employee.	green behaviors. Organizational identification significantly mediated the effect, whereas gender and environmental values failed to moderate the relationship between GHRM and employee green behaviors. The study signifies the role of HRM in achieving environmental sustainability.
Chakraborty and Biswas (2020)	Going green with green HRM practices - A strategic initiative for reinvigorating performance optimization in companies	11	Empirical Analysis	To study the role of G-HRM practices for organizational success.	Green Recruitment & Selection, Green Training, Green Performance Management, Green Rewards Management, and Green Employee Participation provided a way for green management perspective of the firms that promoted environmentalism and had a significant impact on the sustainability of the business. Such sustainable practices ingrained among employees a sense of commitment not only towards these environmental issues, but also towards the corporate mission statement of the organization,

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
					fulfilled its green objectives, and enhanced employees' green performance of the job.
Muduli et al. (2020)	Environmental management and the soft side of organisations: Discovering the most relevant behavioural factors in green supply chains	58	AMOS 4.0	The objective of this research is to empirically analyse the behavioural factors affecting the green supply chain management (GSCM) performance	Assessing the causal connection among the six constructs, that is, top management support, teamwork, workplace culture, resistance to change, green innovation, and green motivation. We further explore the input from the human side of GCSM by highlighting that top management support and green motivation are the most crucial behavioural factors that influence GSCM in the Indian mining sector.
Srivastava et al. (2020)	Authentic leadership towards sustainability in higher education: an integrated green model	22	EFA and Regression	To analyse the effect of green authentic leadership towards sustainability in higher education, with the intervening impact of green internal branding and green training.	The results supported the fit of the proposed model and showed positive and significant effect of green authentic leadership on the sustainability in higher education. Further, green internal branding had a mediating effect between green authentic leadership and sustainability and green training showed a significant

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
					moderating role between green authentic leadership and sustainability relationship.
Rizvi and Garg (2021)	The simultaneous effect of green ability-motivation-opportunity and transformational leadership in environment management: the mediating role of green culture	24	SEM	To study the role of green human resource management (GHRM) and green transformational leadership (GTFL) practices with Green Culture (GC) and for improving the organization's environmental performance (EP).	Findings of this study clarified the importance of GTFL in building suitable culture its proactive role in leading employees towards environmental sustainability.
Gedam et al. (2021)	Sustainable manufacturing and green human resources: Critical success factors in the automotive sector	18	Qualitative research	This study aims to identify critical success factors (CSFs) for implementing sustainability in organizational human resources management (OHRM) within the automotive sector (AS).	The results revealed that top management support and environmental auditing for suppliers are the two most important CSFs to be prioritized among the factors studied, which implies that by managing these factors first, automotive manufacturers may deal better with the adoption of SP. As a result of prioritizing these two factors, other CSFs related to OHRM (e.g., organizational culture, environmental training, rewards, and incentives) will also positively affect the adoption of SP.

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Chaudhary (2021)	Effects of green human resource management: testing a moderated mediation model	22	Hierarchical regression	To examine organizational attractiveness as a mechanism through which adoption of green human resource management (GHRM) practices affects potential employees' intent to pursue career in an organization.	Results provided support for the moderated mediation model in which the indirect effect of GHRM on job pursuit intention through organizational attractiveness was moderated by environmental orientation of prospective applicants.
Rizvi and Garg (2021)	The study of green human resource management practices in Indian organisations and its relationship with green culture and environmental performance	0	qualitative and quantitative study	To study G-HRM practices relation with green culture and environmental performance.	Green human resource management strategies had a significant impact on environmental performance. Environmental sustainability culture partially mediated between all the green human resource management strategies and environmental performance. Results proved importance of green human resource management strategies and culture in improving the environmental performance of manufacturing organisations.
Khatoon et al. (2021)	Green human resource management: A transformational	4	Empirical Research	This paper examined the influence of HR aspects namely	The outcomes demonstrated that individual knowledge towards

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
	vision towards environmental sustainability			green employee empowerment (GEE), HR business partner commitment (HRC) and individual environmental knowledge (IK) on leveraging the GHRM activities and further the influence of GHRM activities on organisational employee commitment towards the environment (OECE)	the environment have a positive relation towards accelerating the GHRM practices, whereas the two other HR factors (GEE) and (HRC) do not have a positive influence in accelerating the GHRM practices in India. Moreover, GHRM practices have a significant impact on boosting the commitment of employees towards the environment in the organisation (OECE).
Agarwal and Kapoor (2022)	Analysis of barriers in green human resource implementation for enhancing organizational sustainability: a DEMATEL approach	7	Decision-making trial and evaluation laboratory (DEMATEL)	The aim of this article is to identify the barriers to Green HRM implementation	A methodology of decision-making trial and evaluation laboratory (DEMATEL) analysed the Green HRM implementation barriers and also the relationship between them so as to develop a framework where more effective Green HRM can be implemented by organisations. The identified barriers were also categorised into two groups, i.e. the cause group and the effect group.

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
Yadav and Mathew (2022)	Educational Perspective & Antecedental Outcomes of Green HRM for Employees' Sustainable Behaviour	0	Descriptive statistics, Correlation	The objective of this study is to assess the direct effects of green human resource management on employees' sustainable behaviour (ESB) and the mediating role of employees' educational perspectives (EPE).	Green HRM has a significant positive impact on employees' sustainable behaviour (ESB) and that the impact is strengthened by the education perspective of employees (EPE).
Srivastava and Dhiman (2022)	Does Green HRM Practices Infuse Green Behaviour Among Hotel Employees? The Mediating Role of Psychological Green Climate	0	SmartPLS	to examine how these GHRM practices and individuals' environmental values drive green behaviour and ultimately foster green creativity among hotel employees in the Indian context.	GHRM and environmental values positively impact employees' green behaviour. Results further suggested that employees' green behaviour positively leads to employees' green creativity via a partial mediating effect of psychological green climate.
Aggarwal and Agarwala (2022)	Relationship of green human resource management with environmental performance: mediating effect of green organizational culture	1	SEM	To focus on investigating the relationship between green human resource management (GHRM) practices and environmental performance (EP).	The study found the green human resource practices to be significantly related with EP of the organization. Results of parallel mediation confirmed that the dimension of GOC played a significant mediating role in the relationship between green human resource practices and EP of the

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
					organization. The other two dimensions of GOC, diffusion and depth, did not have a significant mediating role in this relationship.
Krishna et al. (2022)	Reducing Psychological Distress through Green HRM & to Create Harmonious Sustainable Environmental Passion	0	SEM	To study how GHRM and PD relate to one another from the point of view of an Indian company	The organisation's GHRM efforts have a positive impact on its employees' performance that has created through psychological distress. GHRM and PD are related, but only if employees feel positive about the performance a company stands behind.
Kaur et al. (2022)	Virtual Hiring: An Effective Green Human Resource Management Practice	1	Smart PLS	To establish an Integrated Model of the virtual Hiring mode, its Predictor and Outcome variables.	Significant positive impact of virtual Hiring (Green HRM practice) on Cost Effectiveness, Geographical Outreach and Environment/Health Benefits.
Goel et al. (2022)	Sustainable Green Human Resource Management Practices in Educational Institutions: An Interpretive Structural Modelling and Analytic Hierarchy Process Approach	2	Interpretive Structural Modelling (ISM)	The aim is to identify and develop the relationship between major and minor challenges in adopting GHRM practices in Educational Institutes (EIs).	Focused on clear vision and top management cooperation among these EIs to ensure sustainable GHRM practices from the strategy aspect perspective, benchmark in fixing accountability considering the policy aspect, suitable course

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
					curricula in universities focused on GHRM practices from procedural viewpoint, and transparency in EIs from the perspective of rules as significant challenges in GHRM adoption.
Farooq et al. (2022)	Do green human resource management and self-efficacy facilitate green creativity? A study of luxury hotels and resorts	53	Quantitative research	to examine the association of green human resource management (GHRM) with green creativity (GC). In addition, we examine the mediation effect of green self-efficacy (GSE) and the moderation effect of green transformational leadership (GTL)	The findings confirm a positive association of GHRM with GC as well as the mediation effect of GSE on the association of GHRM and GC. However, the moderated mediation influence of GTL on the indirect effect of GHRM on GC is not supported.
Rizvi and Garg (2022)	Environmental sustainability performance: A study of the role of green human resource management and other green internal intellectual capital components	1	Qualitative	Role of green human resource management (GHRM) in the implementation of environmental strategies and studies its relationship with environmental sustainability performance (ESP).	ESP was found to be related to GHRM and other internal fields of green IC. GHRM also has interlinkages with other internal fields of green IC.
Agrawal and Bansal (2022)	Green HRM: a medium of social responsibility and sustainable development	0	Qualitative and Case study	To study the role of GHRM for green organization.	Study recognized the role of HRM function towards for creating a green organization as well as the current trends of green HRM

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
					practices to ensure social responsibility and sustainability.
Khatoon et al. (2022)	Green HRM: pathway towards environmental sustainability using AHP and FAHP in a nascent parsimony	4	AHP and fuzzy AHP (FAHP)	To observe the dimensions of green HRM (GHRM) practices and its impression toward environmental sustainability	This study emphasizes the status of GHRM practices such as green recruitment and green selection, green performance management, green training and development, green compensation and rewards, green welfare aspects as a way to aid environmental issues. Study confirmed that GHRM initiatives help to leverage environmental sustainability. Green compensation and rewards have the highest impact on leveraging environmental sustainability.
Deshpande and Srivastava (2023)	A study to explore the linkage between green training and sustainable organizational performance through emotional intelligence and green work life balance	2	Qualitative	To review the role of green training and green work life balance (GWLB) on sustainable organizational performance (SOP) with a moderating variable Emotional Intelligence (EI).	SOP can be achieved with the intervention of EI and GWLB; further green training is one of the influential practices of human resource development (HRD) which helps to develop the green behavior.
Veerasamy et al. (2023)	Green Human Resource	1	Hierarchical regression	Exploring the effect of Green	Results indicated that: (a) green

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
	Management and Employee Green Behaviour: Participation and Involvement, and Training and Development as Moderators			Human Resource Management (GHRM) practices on employee green behaviour (EGB).	recruitment strategies (GRS), green institutional initiatives (GII), and green performance management and appraisal (GPMA) positively impact EGB; and (b) EGB is positively related to employee green compensation and rewards (EGCR). The results also reveal that employee green participation and involvement (EGPI) and employee green training and development (EGTD) moderate the relationship between GRS, GII, GPMA, and EGB.
Mittal and Kaur (2023)	Green HRM, green innovation and environmental performance: The moderating role of servant leadership	2	SEM	To examining the influence of practicing green human resource management activities on environmental performance.	Positive and significant mediating role of green innovation (product and process) between Green HRM and Environmental performance. Servant leadership also moderates their relationship thereby strengthening the positive influence of Green HRM on environmental performance.
Veerasamy et al. (2023)	Green human resource management	0	Process macros	Effect of green human resource management	The significant three-way interaction between

Authors	*Title*	*Cited by*	*Methodology*	*Aim*	*Key Findings*
	practices and employee green behaviour			(GHRM) practices on employee green behavior (EGB).	GRS, employee green training and development (E-GTD), and employee green participation and involvement (E-GPI) influenced EGB. The findings also suggest that the three-way interaction between GII, employee green performance management, appraisal (E-GPMA), employee green compensation, and rewards (E-GCR) influencing the EGB was significant.
Yadav and Mathew (2023)	Improving Organizational Sustainable Performance of Organizations Through Green Training	0	Quantitative Approach	To evaluate the direct impact of green training on organizational environmental performance (OEP) and the mediating effect of organizational citizenship behaviour on the environment (OCBE).	Green training has a significant positive impact on the organizational environmental performance, and that the impact is strengthened by organizational citizenship behaviour towards the environment.
Aggarwal and Agarwala (2023)	Relationship of environmental strategy and performance: role of green human resource management	1	SEM	To study relationship between proactive environmental strategy (PES) and environmental performance (EP) with GHRM as the mediator.	Results from structural equation modelling suggested that PES had a positive effect on EP with GHRM partially mediating this relationship.

Source: Compiled by researcher on the basis of review of literature

After presenting author centric review, content analysis was done and four key themes were identified: Sustainable resource utilization; Green creativity; Organizational attractiveness and Environmental sustainability.

Sustainable Resources Utilization

G-HRM practices in an organizational help to make better profit range by avoiding wastage of corporate resources (Sriram and Suba, 2017). Green HRM initiatives taken by companies improves the efficiency of organization and helps in sustainable utilization of resources (Vijaykarthigeyan and Giriprakash, 2019). GHRM practices improves the sustainable behavior of employees that always concern about utilization of resources (Khatoon et al., 2022).

Green Creativity

Farooq et al. (2022) confirmed a positive association between green human resource management and green creativity. Srivastava and Dhiman (2022) study proved that GHRM and environmental values positively impact the employees green behviour that further leads to green creativity through mediating effect of psychological green climate.

Organizational Attractiveness

Chaudhary (2018) highlighted in his study that GHRM was significantly related with job pursuit intention (JPI) of prospective applicants by the mediating effect of organizational prestige (OP). Another study of Chaudhary (2019) confirmed that GHRM practices positively lead to organizational attractiveness that further develop prospective employees' job pursuit intention. Chaudhary (2021) highlighted that relation of GHRM and job pursuit intention mediated by organizational attractiveness was significantly moderated by environment orientation.

Environment Sustainability

Rizvi and Garg (2021) highlighted that green human resource management strategies had a significant impact on environmental performance. Khatoon et al. (2022) emphasized the status of GHRM practices such as green recruitment and green selection, green performance management, green training and development, green compensation and rewards, green welfare aspects as a way to aid environmental issues. These initiatives help to leverage environmental sustainability. Further, this paper reveals that green compensation and rewards have the highest impact on leveraging environmental sustainability.

IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

This study compiled the literature related to green human resource management practices in a systematic manner. This research provided a pool of significant reviews of GHRM practices and its role in environmental sustainability and organizational effectiveness that helps the

academicians and researchers working in this field. On the other side this research provided directions to practitioners and policy makers to frame policy for matching environmental goal of organization through implementing GHRM practices in organization.

This research compiled the existing literature in a systematic way without collecting empirical evidences. Hence, further research can be conducted via collecting primary data. This systematic review was based only on Scopus database. Again, systematic review and bibliometric analysis can be done by including other databases like web of science, EBSCO, Pubmed, etc.

REFERENCES

[1] Agarwal A.; Kapoor K. (2022). Analysis of barriers in green human resource implementation for enhancing organizational sustainability: A DEMATEL approach. *Transnational Corporations Review*. DOI: 10.1080/19186444.2021.1982575.

[2] Aggarwal P.; Agarwala T. (2022). Relationship of green human resource management with environmental performance: Mediating effect of green organizational culture. *Benchmarking*. DOI: 10.1108/BIJ-08-2021-0474.

[3] Aggarwal P.; Agarwala T. (2023). Relationship of environmental strategy and performance: role of green human resource management. *International Journal of Business Environment*, 14(1), 37-66, DOI: 10.1504/IJBE.2022.10048217.

[4] Agrawal N.; Bansal R. (2022). Green HRM: a medium of social responsibility and sustainable development. *International Journal of Innovation and Sustainable Development*, 16(2), 172-185. DOI: 10.1504/IJISD.2022.121781.

[5] Chakraborty D.; Biswas W. (2020). Going green with green HRM practices - A strategic initiative for reinvigorating performance optimization in companies. *Prabandhan: Indian Journal of Management*, 13 (11), 8-26. DOI: 10.17010/pijom/2020/v13i10-11/156006.

[6] Chaudhary R. (2018). Can green human resource management attract young talent? An empirical analysis. *Evidence-based HRM*, 6(3), 305-319. Doi: 10.1108/EBHRM-11-2017-0058.

[7] Chaudhary R. (2019). Green human resource management and job pursuit intention: Examining the underlying processes. *Corporate Social Responsibility and Environmental Management*, 26(4), 929-937, DOI: 10.1002/csr.1732.

[8] Chaudhary R. (2019). Green human resource management in Indian automobile industry. *Journal of Global Responsibility*, 10(2), 161-175. DOI: 10.1108/JGR-12-2018-0084.

[9] Chaudhary R. (2020). Green Human Resource Management and Employee Green Behavior: An Empirical Analysis. *Corporate Social Responsibility and Environmental Management*, 27(2), 630-640. DOI: 10.1002/csr.1827.

[10] Chaudhary R. (2021). Effects of green human resource management: testing a moderated mediation model. *International Journal of Productivity and Performance Management*, 70(1), 201-216. DOI: 10.1108/IJPPM-11-2018-0384.

[11] Deshpande P.; Srivastava A.P. (2023). A study to explore the linkage between green training and sustainable organizational performance through emotional intelligence and green work life balance. *European Journal of Training and Development*. 47(6), 615-634. DOI: 10.1108/EJTD-11-2021-0182.

[12] Farooq R.; Zhang Z.; Talwar S.; Dhir A. (2022). Do green human resource management and self-efficacy facilitate green creativity? A study of luxury hotels and resorts. *Journal of Sustainable Tourism*, 30(4), 824-845, 53, DOI: 10.1080/09669582.2021.1891239.

[13] Gedam V.V.; Raut R.D.; Lopes de Sousa Jabbour A.B.; Narkhede B.E.; Grebinevych O. (2021). Sustainable manufacturing and green human resources: Critical success factors in the automotive sector. *Business Strategy and the Environment*, 30(2), 1296-1313. DOI: 10.1002/bse.2685.

[14] Goel P.; Mehta S.; Kumar R.; Casta F. (2022). Sustainable Green Human Resource Management Practices in Educational Institutions: An Interpretive Structural Modelling and Analytic Hierarchy Process Approach. *Sustainability* (*Switzerland*), 14(19). DOI: 10.3390/su141912853.

[15] Jain N.; D'lima C. (2018). Green HRM - a study on the perception of Generation Y as prospective internal customers. *International Journal of Business Excellence*, 15(2), 199-208, DOI: 10.1504/IJBEX.2018.091916.

[16] Kaur S.; Sehgal J.K.; Grima S. (2022). Virtual Hiring: An Effective Green Human Resource Management Practice. *International Journal of Sustainable Development and Planning*. 17(6), 1699-1704. DOI: 10.18280/ijsdp.170602.

[17] Khatoon A.; Khan N.A.; Bharadwaj S.; Parvin F. (2021). Green human resource management: A transformational vision towards environmental sustainability. *International Journal of Business Environment*, 12(3), 207-226. DOI: 10.1504/IJBE.2021.116590.

[18] Khatoon A.; Khan N.A.; Parvin F.; Wahid M.S.; Jamal M.T.; Azhar S. (2022). Green HRM: pathway towards environmental sustainability using AHP and FAHP in a nascent parsimony. *International Journal of Manpower*, 43(3), 805-826. DOI: 10.1108/IJM-04-2020-0164

[19] Krishna S.H.; Prasad K.D.V.; Reddy S.J.; Desai S.; Kumar A. (2022). Reducing Psychological Distress through Green HRM & to Create Harmonious Sustainable Environmental Passion. *Journal for ReAttach Therapy and Developmental Diversities*, 5(2), 8-14.

[20] Mandip, G. (2012). Green HRM: People management commitment to environmental sustainability. *Research Journal of Recent Sciences*.

[21] Mishra P. (2017). Green human resource management: A framework for sustainable organizational development in an emerging economy. *International Journal of Organizational Analysis*, 25(5), 762-788, DOI: 10.1108/IJOA-11-2016-1079.

[22] Mishra R.K.; Sarkar S.; Kiranmai J. (2014). Green HRM: Innovative approach in Indian public Enterprises. *World Review of Science, Technology and Sustainable Development*, 11(1), 26-42, DOI: 10.1504/WRSTSD.2014.062374.

[23] Mittal E.; Kaur P. (2023). Green HRM, green innovation and environmental performance: The moderating role of servant leadership. *Human Systems Management*, 42(1), 27-40. DOI: 10.3233/HSM-220066.

[24] Muduli K.K.; Luthra S.; Kumar Mangla S.; Jabbour C.J.C.; Aich S.; de Guimar J.C.F. (2020). Environmental management and the soft side of organisations: Discovering the most relevant behavioural factors in green supply chains. *Business Strategy and the Environment*, 29(4), 1647-1665. DOI: 10.1002/bse.2459.

[25] Praveen Kumar P.; Raja Shree K.C. (2019). Green human resource management: A access device to evade exhaustion of natural resources. *International Journal of Innovative Technology and Exploring Engineering*, 8(11 Special Issue), 740-743. DOI: 10.35940/ijitee.K1128.09811S19.

[26] Raut R.D.; Gardas B.; Luthra S.; Narkhede B.; Kumar Mangla S. (2020). Analysing green human resource management indicators of automotive service sector. *International Journal of Manpower*, 41(7), 925-944. DOI: 10.1108/IJM-09-2019-0435.

[27] Raut R.D.; Luthra S.; Narkhede B.E.; Mangla S.K.; Gardas B.B.; Priyadarshinee P. (2019). Examining the performance-oriented indicators for implementing green management practices in the Indian agro sector. *Journal of Cleaner Production*, 215, 926-943. DOI: 10.1016/j.jclepro.2019.01.139.

[28] Rizvi Y.S.; Garg R. (2021). The simultaneous effect of green ability-motivation-opportunity and transformational leadership in environment management: The mediating role of green culture. *Benchmarking*, 28(3), 830-856, DOI: 10.1108/BIJ-08-2020-0400.

[29] Rizvi Y.S.; Garg R. (2021). The study of green human resource management practices in Indian organisations and its relationship with green culture and environmental performance. *International Journal of Environment, Workplace and Employment*, 6(3), 234-258. DOI: 10.1504/IJEWE.2021.119690.

[30] Rizvi Y.S.; Garg R. (2022). Environmental sustainability performance: A study of the role of green human resource management and other green internal intellectual capital components. *International Journal of Business and Systems Research*, 16(1), 65-105. DOI: 10.1504/IJBSR.2022.119598.

[31] Sriram V.P.; Suba M. (2017). Impact of green human resource management (G-HRM) practices over organization effectiveness. *Journal of Advanced Research in Dynamical and Control Systems*, 9(7), 386-394.

[32] Srivastava S.; Dhiman N. (2022). Does Green HRM Practices Infuse Green Behaviour Among Hotel Employees? The Mediating Role of Psychological Green Climate. *Vision*. DOI: 10.1177/09722629221129759.

[33] Thakur V.; Mangla S.K. (2019). Change management for sustainability: Evaluating the role of human, operational and technological factors in leading Indian firms in home appliances sector. *Journal of Cleaner Production*, 213, 847-862. DOI: 10.1016/j.jclepro.2018.12.201.

[34] Veerasamy U.; Joseph M.S.; Parayitam S. (2023). Green Human Resource Management and Employee Green Behaviour: Participation and Involvement, and Training and Development as Moderators. *South Asian Journal of Human Resources Management*. DOI: 10.1177/23220937221144361.

[35] Veerasamy U.; Joseph M.S.; Parayitam S. (2023). Green human resource management practices and employee green behavior. *Journal of Environmental Planning and Management*. DOI: 10.1080/09640568.2023.2205005.

[36] Vijaykarthigeyan K.T.; Giriprakash A. (2019). Green HRM practices followed by selected manufacturing industries in Coimbatore. *International Journal of Recent Technology and Engineering*, 8(2 Special Issue 4), 659-662. DOI: 10.35940/ijrte.B1131.0782S419.

[37] Yadav P.; Mathew J. (2022). Educational Perspective & Antecedental Outcomes of Green HRM for Employees' Sustainable Behaviour. *Journal for ReAttach Therapy and Developmental Diversities*, 5(Special Issue 1), 95-101.

[38] Yadav P.; Mathew J. (2023). Improving Organizational Sustainable Performance of Organizations Through Green Training. International Journal of Social Ecology and Sustainable Development, 14(1). DOI: 10.4018/IJSESD.321166.

SECTION 2

TECHNOLOGY & GREEN PRACTICES IN FINANCIAL WORLD

Analyzing the Significance of Forensic Accounting in Detecting Financial Frauds in the Indian Banking Context: A Critical Review

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Abstract

Forensic accounting is one of the newest and fastest-growing areas of practice for accountants. In the fight against financial and white-collar crimes, forensic accounting makes use of bookkeeping, auditing, and analytical knowledge. Because of high-profile incidents of corporate crime and financial fraud, forensic accounting has grown in breadth. To fight corruption, financial crime, and fraud, forensic accounting is a dynamic and strategic instrument that employs forensic auditing methods. An investigation of the reasons why forensic accounting and auditing is necessary, and the elements that govern its execution, has been prompted by recent financial scandals in the Indian banking industry. All of these literatures were used to get an idea of what has been done so far, as well as to identify the areas of inquiry that require additional investigation to get a sense of the current intellectual thinking on these themes. Forensic accounting is a term that has been used in a wide range of academic and professional publications to describe how it may be used to investigate financial crimes and prevent future scams.

Keywords: *Forensic Accounting, Auditing, Financial, etc.*

INTRODUCTION

Present-day economic issues have figured prominently because of financial frauds. Several large-scale scams have caused the financial health and reputation of banks and the economy to be jeopardized as a result of this outbreak.[1] According to the Cambridge Dictionary, fraud is anything or any act that aims to deceive others by falsely claiming or being given credit for achievements that are unjustifiably claimed or given credit for.[2] Bank fraud has long been a major source of worry for governments across the world.[3] A greater financial fraud compliance agenda must be implemented throughout a far broader range of industries, including banking, insurance, and other financial services organizations, in order to reduce the risk of fraud.[4] Are regulators doing a good enough job of protecting consumers? Is the system of internal controls effective? What are the biggest obstacles banks confronting in preventing and detecting fraud? Are banks aware of new fraud opportunities? The question is whether or whether the banks have the capacity to notice "red lights" in advance.

The worldwide media has given extensive emphasis to bank fraud in the recent decade. The governments have passed a number of regulations aimed at curbing fraud, but they have been poorly enforced, reducing their intended effect. Frauds have extended to new domains because of the increase of digital transactions supported by technology. Financial intermediaries and capital suppliers for significant economic activity are the role of banking institutions.[5] Consequently, it's critical to figure out ways to deter and catch bank fraud. For banks, the most difficult task is to create comprehensive controls for preventing and detecting fraud.[6]

Bribery, political corruption, consumer fraud, company employee fraud, network harking, bankruptcy divorce fraud, identity theft, and even the theft of secret information are all forms of fraud. An artifice or cabal is a deceitful technique, scam or game that is devoted to cheating someone and providing something unnecessary in order to obtain an advantage.[7] The rise in business conflicts, accounting scams, and litigation in the courts, as well as the rise in creative accounting and imprecise accounting, have bolstered the demand for this profession. The management of the bank is confronted with the challenge of managing a large number of people at once, making it difficult for them to keep track of their staff. This makes it simple for workers to steal from their companies. Inevitably, employees become well-versed in the inner workings of a business and are aware of the company's strengths and flaws. Accounting tasks included fraud detection and prevention, which was the responsibility of both internal and external Auditors. Auditor responsibilities do not include fraud prevention or detection; instead, they are limited to verifying that the company's financial statements are in accordance with applicable accounting and other financial reporting standards and guidelines. As a consequence, "Forensic Accounting" arose as a new accounting category. Due to the rise of Forensic Accounting, businesses could now identify fraudulent activity.[9]

OBSERVATIONS ON FORENSIC ACCOUNTING

[10] defines forensic accounting as the use of financial expertise and an investigative mindset to unresolved cases in line with evidentiary rules, FISMA-compliant "forensic accounting" [11–12] is the practice of resolving unsolved issues by using accounting and auditing, financial, and investigative know-how, Forensic accounting's purpose is to uncover and evaluate fraudulent transactions in order to understand the actual motivation of the fraudster, according to this explanation. In this kind of assessment, documents, interviews, and electronic data are examined. Investigation, accounting, and auditing skills must be integrated when dealing with legal issues using auditing techniques, tactics, or procedures. Legal experts may be called upon to acquire, evaluate and summarize complicated financial material for use in court as an expert.[13-14] To be admissible in court, forensic evidence must fulfil the legal criteria and be presented in an appropriate way. To put it another way, fraud examiners employ their investigative and analytical skills to resolve financial issues in compliance with the legal requirements. A forensic accountant needs the knowledge of an attorney, an auditor, and a fraud detective in order to properly investigate a situation.

THE CHARACTERISTICS OF FORENSIC ACCOUNTING

Investigation tactics, along with business and accounting abilities, are used to create facts and views that may be used in court or by expert witnesses. Forensic accounting, according to [15], is the application of accounting principles and procedures to legal issues. Reporting is necessary to ensure that those responsible for fraud are held accountable and that the report serves as evidence in a legal process. Many accountants are drawn to forensic accounting because of its challenging nature.[16] Litigation support services, accounting investigations, and assembling trial-ready evidence all fall under the broad umbrella of litigation support services, which encompasses a wide range of activities critical to the banking sector. Due to its focus on the evidentiary nature of accounting data, forensic accounting may be one of the most effective and efficient ways to reduce and prevent fraudulent activities. This is because it is a practical field that deals with accounting fraud and forensic auditing; compliance; due diligence and risk assessment; the detection of financial misrepresentation and financial statement fraud.

Financial data is analyzed by forensic accountants to make inferences, compute values, and discover questionable activities. For conflict settlement in certain circumstances, it gives an accounting analysis to the court; it also provides the courts with an explanation of fraud committed.[17] According to [18] quality promotes improved efficiency, higher productivity and high-quality products and services. This is the reason why forensic accounting may be crucial in the detection and reduction of accounting frauds in the banking industry. Reworking and repairing errors made previously due to carelessness or ignorance takes up less time. The competency of a forensic accountant is critical to the success and quality of a forensic audit operation. To establish whether or not fraud has been committed or has happened in the business environment, the technique incorporates legal and accounting processes that are consistent. Forensic auditors are critical in identifying patterns and hidden evidence of infringement or theft in the organizational setting, but forensic accountants play a significant role in the legitimacy of the evidence obtained. Once the strong connection between the two has been established, according to [19] expertise and skill set are critical in the forensic audit process. Although there is a negative correlation between audit quality and procedural efficiency, the author argues that auditors' high levels of expertise lead to a narrowing of auditors' expectations. The author emphasizes the importance and relevance for development of financial bank reports by integrating capabilities in banking sector by providing proper training and efficiency boosting frameworks for their staff. Formal education and the advancement of forensic accounting go hand in hand, according to [20], who also expresses this view. Forensic accountants must keep their knowledge and abilities up-to-date to keep up with the ever-changing economic practices, says the author.

ADVANTAGES OF FORENSIC AUDITING OVER TRADITIONAL AUDITING PROCESS

The auditor's approach differs depending on whether the audit is forensic or conventional. There are some aspects of a company where a traditional financial audit may mention key

audit matters at a superficial level, but the inclusion of legal procedures and traditional auditing procedures serves as the basic framework for a forensic audit that includes minute evaluation and in-depth analysis of the performance of the company, potentially uncovering hidden risks. It is preferred to conduct forensic audits rather than routine financial audits because forensic audits look at an organization's overall performance over a longer period of time to provide more context to the findings of the audit. The essential concepts of conventional audits and the integration of the legal and regulatory framework [21] offer investors with guarantees about the return on their financial assets and increase investor trust in banks' supply of financial assistance.

As a result of effective direction and supervision, the forensic audit process may be strengthened and the fight against fraud can be improved. The rising frequency of corporate frauds shows that, in addition to rigorous adherence and incorporation of law, adequate supervision and monitoring methods are of utmost significance in mitigating the occurrence. The inclusion of advanced corporate governance to fight and decrease fraud occurrence and other associated processes may greatly affect and perform the forensic accounting detective roles,[22] extending the relevance of governance and control mechanisms on the forensic audit method. An essential aspect of corporate governance is that it has a significant impact on the conduct of audit and forensic accounting in addition to reducing unethical behaviors. according to the authors, who identified three primary components to corporate governance enforcement.

CHALLENGES IN THE AUDIT AND FORENSIC ACCOUNTING PROCEDURES

An investigation's challenges in the forensic accounting system assist to identify the probable factors that impede the execution of the investigative process. Forensic accountancy is a vital tool for making informed decisions, but the ability to implement it in the current Indian setting is debatably possible due to a lack of resources and a lack of expertise. The following paragraph sums up the main reasons why the challenges arising from the forensic auditing method in the context of the Indian economy are likely to grow.

Some Chartered Accountancy companies are likewise reluctant to use "Computer Aided Auditing Tools" (CAAT) in their audits. Some people find the transfer from a manual procedure into one that uses technology onerous. Many businesses are reluctant to take fraud cases to court because expert witness testimony is often required, and this is seen as an expensive procedure. As a result, they prefer to settle things out of court to save money and to prevent tarnishing the company's brand.[23] The legal system in India is still based on the British system, which means that bringing a fraud case to the attention of the court requires a large financial outlay, as well as the hire of competent attorneys.[24] In order to complete the forensic accounting procedure, it requires a lot of time and effort, it is common for firms to reluctance to use these services in order to avoid drudgery and focus on their company. In addition to all of the foregoing issues, the most major one is the lack of a defined guideline or act by the involved authorities on forensic accounting methods.[23]

Another distortion of successful implementation is the asymmetry of information in forensic audits, which are particularly problematic. Forensic audit procedures are substantially hampered by the inability to get the relevant data at the right time. In this respect, [25] identify that the quality of the company's reports is substantially affected by the storage and preservation of data in the organizational environment. By not reporting to auditors, the author claims that auditors generate reports based on data provided by the board of directors, altering the processes' legitimacy,[26] make a crucial point at this point, stating that the knowledge asymmetry is exacerbated by auditors' lack of independence in the connection between the company and the auditor. It comes to light since it is not self-sufficient and must adhere to professional standards.

According to [27] in the Economic Times article, Indian authorities and policymakers take an average of two years to identify scams. Forensic audit methods are less successful when there is information asymmetry, as the KPMG analysis indicated that big frauds above INR I billion take an average of four and a half years to identify. As a result of these factors. the paper concludes that it is impossible to identify fraud in the early stages because of an information asymmetry problem, as well as a lack of review time [28]. The overall number of banking sector frauds for 2018-19 and 2019-2020 years are shown in the following figure.

Table 1: Fraud Cases

Banks	*2018-19*		*2019-20*	
	No. of Frauds	*Amount Involved*	*No. of Frauds*	*Amount Involved*
Public sector banks	3,568	62,283	4,413	1,48,400
Private sector banks	2,286	6,742	3,066	34,211
Foreign banks	762	955	1,026	972
Financial institutions	28	553	15	2,048
Small finance banks	115	8	147	11
Payment banks	39	2	38	2
Local area banks	1	0.02	2	0.43
Total	6,799	71,543	8,707	1,85,644

Source: www.ibfi.com

The effectiveness and usefulness of the forensic accounting system are heavily dependent on the consistency and standardization of the procedures and methods used.[30] proposes that cash proof be the most important tool in the forensic accounting process, among the well-proven methods utilized to operationalize the system. In the author's opinion, monetary proof is preferable to database manipulation as a means of proving fraud.[31] acknowledges the relevance of proper data analytics tools for the successful completion of the process when identifying the core forensic auditing and instruments to practice. It is supported by the author that Benford's law and the usage of methods such as correlation, time series, and descriptive analysis should be used in the audit. Digitalization has had a tremendous impact on the auditing and accounting process, and forensic auditing is no different. Computer-Aided Audit Techniques (CAAT) and other technologies are increasing the audit process' complexity.

which makes it more difficult for auditors to keep track of both the volume of digital data and auditable documents.[32-33]

Theoretical Frameworks of Fraud Detection

The agency theory [34] and the fraud triangle concept [35] are the two basic theories that drive this research. A combination of the fraud triangle model and agency theory will be used to identify audit's function as well as the existing accounting system's vulnerabilities in order to better detect financial statement fraud. The theories will be examined in more depth and tied together now that they've been separated.

The Fraud Triangle in Agency Theory

The theory of agency will be used to provide insight and a justification for the need of audits in the corporate community, particularly in the capital markets. It is widely accepted that an audit is an essential economic instrument for ensuring transparency. Public trust in the financial reporting process is bolstered and reinforced as a result of this important function, The financial statement is a critical tool for shareholders to assess the performance of management because of the separation of ownership and control in businesses [37]. A critical role in sustaining trust and confidence in the agency relationship between principal and agent is played by an audit that serves a critical economic goal (shareholders and management respectively).

Internal and external audits are pushed in an agency relationship as a trust-building tool to convince the public that capitalism's corporations and managers are not corrupt and that they are held accountable [39]. As stated by the [36]. the agent's work is seen as being independently checked by audit, and the information supplied by the audit contributes to the maintenance of confidence and trust. The purpose of the audit was to increase confidence between the principals (the shareholders) and the agent (management), This is why the agency theory is the appropriate lens through which to see the role of audit in company, especially the capital market.

Agency Theory

The stewardship theory [40], the broken trust theory [41], and the agency theory [34] are a few examples of theoretical viewpoints that may be utilized to explain how a firm function. A different way of looking at the world is provided by each of these theoretical viewpoints. The capacity to analyze individual actions and behaviors in the context of an organization has a significant impact on an understanding of its nature.[42] The theory of "agency." also known as "contracting theory," is one of several that have been applied to the study of organizations and have come to dominate the field of accounting. [34] and [41] introduced the concept of agency theory to management literature. Using agency theory, we may better comprehend human organizational structures, such as incentive pay, auditing, and numerous bonding

arrangements [43]. The agency theory is the most popular and commonly utilized audit theory. As an economic theory of responsibility, it is widely accepted.

Theory offers a framework for analyzing agency interactions and is recognized as a leading research paradigm for defining and understanding the contractual connection between the principal and agent. Among the multiple contractual ties that exist between management, owners, creditors, and other players, an organization is considered as the hub or crossing point.

The economic viewpoint of the agency theory posits that the relationship between the principal and the agent is characterized by a conflict of interest. The economic models that support the agency thesis claim that humans are simply driven by their own self-interest and survival. There are a number of behavioral assumptions that form the foundation of agency theory. Agents are assumed to be self-centered selfishness maximizes who put their own interests before of others. As a result, both the agent and the principal's interests must be aligned.

As a result, managers are seen as selfish people who put their personal interests good of the company. An agent-principal power struggle is common. Information asymmetry is the most common cause of this conflict of interest. Management at the front lines of operations has access to key information that may be manipulated to maximize their own interests at the cost of the principal [36], and this knowledge is important to making sound decisions. Because of this, management (agent) has an edge over the owners in terms of information available to them in the organization (principal). Because of the agent's informational advantage, the principal is unable to direct the agent's intended behavior [44].

The term "agency issue" refers to this kind of dispute. Due to a lack of trust due to information asymmetries and self-interest, the principle is likely to put in place mechanisms to align the interests of the agents with those of the principal and decrease the scope for information asymmetries and opportunistic behavior.[36]



Figure 1: Agency Triangle

The Fraud Triangle Theory

Financial statement fraud may be committed by anybody, theoretically. Fraud offenders can't be identified based on demographic or psychological factors, according to previous studies.

In several cases, those who committed financial statement fraud had previously been regarded as trustworthy.[46]

Only 10% of people will be honest, according to the "80/10/10" saying, which states that 80% of people will be dishonest. 10% of people are thought to be dishonest and willing to commit crimes anytime they have the chance. Given the correct conditions and circumstances, the remaining 80 per cent of the population may act unethically.[47] By overriding controls and working with other personnel, top management has historically been in the greatest position and has the required skills to commit financial statement fraud.[46]

There is now a unanimous agreement that the fraud triangle is the best way to explain and analyses fraud. According to a fraud triangle, individuals will commit fraud if there is perceived pressure, perceived opportunity, and a means to rationalize the deception as being compatible with one's beliefs. This is mostly the case when it comes to falsifying financial records. A company's top executives may engage in creative accounting. which may ultimately lead to financial statement fraud, when they are under pressure to fulfil analyst expectations and may detect a lack of rigour in the accounting processes and standards.

There can be no embezzlement until all three of these characteristics are present, according to [49]. To be clear. the three components do not have to be in exactly the same proportion. Fraud is easier to pull off when just one of the three components is missing. For example, a criminal breach of trust requires less apparent opportunity and rationalization when pressure is severe. Figure 2 illustrates the fraud triangle idea.



Figure 2: Fraud Triangle

It is now time to go into further depth about the three fraud triangle components.

Amount of Pressure Feeling

Individuals who are influenced by perceived pressure are said to be "disciplined." The urge to perpetrate fraud does not have to be genuine, according to [48]. As a result, he advocated for the usage of the phrase "felt pressure" rather than "pressure." Fraud offenders may commit fraud if they perceive they are under

There are two types of situational pressure: those that motivate workers to commit fraud on behalf of the company and those that encourage workers to commit fraud against the

company. Employees may be motivated to commit fraud if their company fails to fulfil analyst estimates, gross margin or profits, has a cash shortfall, or is delisted from the stock exchange market.

Opportunity

The second factor that an agent must have in order to conduct fraud is the perception of an opportunity to commit fraud. Fraud is not a one-time occurrence. Motive and opportunity play a role in all criminal trust violations [51]. An employee's ability to perpetrate a criminal breach of trust is only possible if there is a perception that the fraud would go unnoticed. A fraudster will not commit fraud if there is no chance to do so. Corporate fraud is Very uncommon, even when leaders are under a lot of perceived pressure. There are times when pressure to perpetrate and cover up fraud is too much for executives who think they have an opportunity. [41] Assuming that individuals will take advantage of their circumstances, the idea of opportunity is based on the assumption that they will.

Rationalization

The rationalization is the last component of the fraud triangle model. prior to participating in a dishonest or fraudulent conduct, a fraud offender must first construct a morally acceptable thought to himself.[39] Prior to committing the fraud, fraudsters must explain their actions to themselves. It is exceedingly unlikely that criminal or dishonest behaviour would occur if there is no moral basis for it[50].

Fraud Diamond

According to [53], in an attempt to boost the chances of detecting and preventing management fraud, [53] suggested the notion of the fraud diamond. A fourth component of the fraud triangle, individual capability, should be added to the existing components of pressure. opportunity, and rationalization.

While the other three criteria are present, an individual's personality has a substantial association with their capacity to conduct fraud. According to proponents of the fraud diamond model, the right individuals with the right talents were in place to avoid several billion-dollar managements frauds (like Enron and WorldCom).

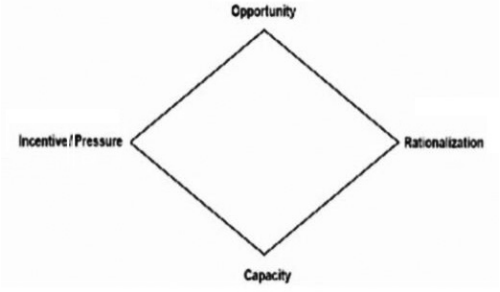


Figure 3

The Fraud Scale

Fraud Scale was devised by Albrecht, Howe and Romney in an effort to forecast the possibility of a fraudulent behaviour based on the examination of the relative opportunity, forces of pressure and personal integrity. In order to establish whether a scenario is more likely to be fraudulent, the Fraud Scale takes into account factors such as pressure, opportunity, and integrity. A person's likelihood of committing an act of professional fraud is much higher when opportunities and pressures are great and personal integrity is low, according to the fraud scale [54]. Figure 4 depicts the Fraud Scale.

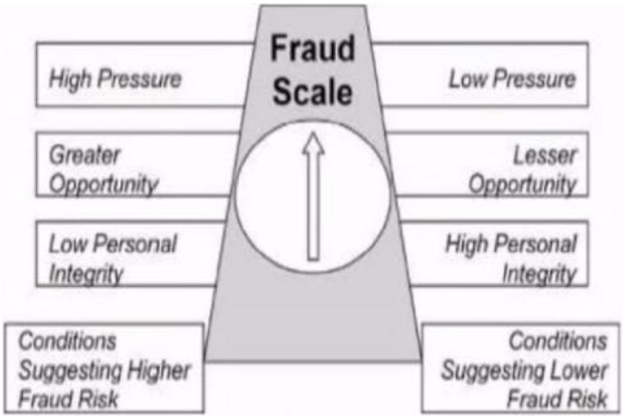


Figure 4: The Fraud Scale

Because rationalization cannot be assessed, Albrecht and his coworker first attacked the Fraud Triangle as a flawed system. In their Fraud Scale Model, they replaced rationalization with personal integrity and came to the conclusion that people with high levels of personal integrity commit fraud less often. The accounting profession seems to have no control over these three aspects, even if they are not immediately visible, since it is impossible to predict who would commit fraud among those having the necessary competencies. Only the apparent opportunity in fraud diamond and the fraud triangle can be managed.

FORENSIC ACCOUNTING AND AUDITING TOOLS AND METHODS

Information technology is considered as both beneficial and detrimental. This is due to the fact that, even if technology has made it easier to do business, it is still difficult to comprehend all of its intricacies. Prosecutors employ these technological skills to perpetrate banking-related offences.[55] When it comes to financial accounts. forensic accountants are required to be up-to- date on all technical elements as well as to go beyond just the numbers. The following are some of the most often used tools and strategies for spotting and avoiding fraud:

- **Using Benford's Law,** researchers may determine if a variable under investigation is the result of fraud or an inadvertent error.[23]
- **Theory of Relative Size Factor (RSF):** This is a strategy for detecting unexpected transactions or fluctuations in an audited system.[56]

- **Trending:** The investigator uses this strategy to detect fraud by concentrating on transactions that are out of the ordinary. This method aids senior management in making decisions.[56]
- **Ratio Analysis:** A variety of financial ratios are generated to analyses the patterns across different periods of the same firm and to compare with other companies in the same sector. The cause of any unusual fluctuation found throughout the procedure will be further studied. It is used to assess a company's financial health and to compare its results to those of comparable businesses in the same industry from the previous year. In order to detect major discrepancies and prevent numbers from being modified to hide fraud [56], this procedure is necessary.
- **In forensic auditing**, this tool is known as CAAT (Computer Assisted Auditing Tools). In order to the validity of the transactions and account balances, a computer software is used [56].
- **Data mining:** Another frequent approach is "Data mining". When a forensic accountant has to deal with a huge amount of data, this approach is most often used.[56]
- **Expert system:** An expert system may assist identity problems that have not been fixed, A collection of preset information on a wide range of professions, including law, accounting, and finance. All kinds of difficulties may be solved with the help of artificial intelligence.[56]

CONCLUSION

Specifically, this study's goal is to get a better grasp of forensic accounting practices in India. Working definition and sharing of business experiences should be conducted and encouraged to develop a shared understanding of forensic accounting in India, which is a relatively new field of study. Forensic accounting has a bright future as a distinct "niche" consulting service. It's being utilized more as a means of gathering evidence than as a means of averting disaster. Many frauds may be prevented if forensic auditing is made obligatory in multiple areas, new laws for the punishment of fraudsters, no matter where they're from or what their legal status, are also needed. Such laws must take into account the usage of information technology in fraudulent practices. RBI has also requested that banks use forensic auditing methods as a means of preventing fraud in the financial industry. Forensic services need specific training as well as genuine "practical" organizational experience.

REFERENCES

[1] Gupta, P.K., & Gupta, S. (2015). Corporate frauds in India: perceptions and emerging issues. *Journal of Financial Crime*, 22(1), 79–103.

[2] Alleyne, P., Persaud, N., Alleyne, P., Greenidge, D., & Sealy, P. (2010). Perceived effectiveness of fraud detection audit procedures in a stock and warehousing cycle: additional evidence from Barbados. *Managerial Auditing Journal*, 25(6), 553–568.

[3] Kaveri, V.S. (2014). Bank frauds in India: emerging challenges. *Journal of Commerce and Management Thought*, 5(1), 14–26.

[4] Ghosh. S & Bagheri, M, (2006). The Ketan Parekh fraud and supervisory lapses of the Reserve Bank of India (RBI): a case study, *Journal of Financial Crime*, 40(2).

[5] Costa, A., & Wood, T. (2014). Corporate fraud. *Journal of Management*, 12–15

[6] Boateing, R., Longe, O.B., Mbarika, V., Avevor, I., & Isabalija, S.R. (2010). Cyber-crime and criminality in Ghana: Its forms and implications. *AMCIS*, 507.

[7] Hanson, Richard. (2007). Encyclopedia of Business and Finance, 2nd Ed. Institute of Turkish History (1998). *Turkish dictionary*, Vol. 1. Institute of Turkish History press House, Ankara.

[8] Coenen, T. (2008). Essentials of corporate fraud. Hoboken, NJ: Wiley; Chichester; John (Distributor). Essentials Series.

[9] Bhasin, M., 2007. Forensic Accounting: A New Paradigm for Niche Consulting. Research Gate.

[10] Bolgna, G and Linquist, R. (1995). Fraud Auditing and Forensic Accounting: New Tools and Technique. 2nd Ed, New York, NY: John Wiley & Sons.

[11] Arokiasamy, L., and Cristal-Lee. S. (2009). Forensic Accounting: public Acceptance towards Occurrence of Fraud Detection. *International Journal of Business and Management*, 145–160.

[12] Ozkul, F. U., & A. (2012). Fraud Detection and Forensic Accounting. In Emerging Fraud (pp. 19–41). Springer Berlin Heidelberg. http://dx.doi.org/10/1007/978-3-642-20826-3_2.

[13] McgrawHill/Invin Howard, S. & Sheetz, M. (2006). Forensic Accounting and Fraud Investigation for Non-Experts. New Jersey: John Wiley & Sons Inc.

[14] Stanbury, J., & Paley-Menzies, C. (2010, June 28), Forensic Futurama: Why Forensic Accounting is Evolving. *AICPA*. Retrieved from http:/jwww.aicpa.org/Publications/Newsletters/AICPACPAlnsider/2010/jun28/Pages/ForensicFuturamaWhyForensicAccountingIsEvolving.aspx

[15] Dhar, P. and A. Sarkar (2010). Forensic accounting: An accountant's vision. *Vidyasagar University Journal of Commerce*, 15(3): 93-104.

[16] Kranacher, J.J., Morris, J3. W., Pearson, T.A. & Riley, R.A. (2008). *A model curriculum for education in fraud and forensic accounting: Issues in Accounting Education*, vol. 23, no. 4, 505–519.

[17] Kob, A. N., Arokiasamy, L., & Suat, C. L. A. (2009). Forensic Accounting: Public Acceptance towards Occurrence of Fraud Detection. *International Journal of Business and Management*, 4(11), p145. https://doi.org/10.5539/ijbm.v4n11p145

[18] Jeyarathmm, M. 2008. Strategic Management. IND: Mumbai, Global Media. Lal, H. 2008. Organizational Excellence Through Total Quality Management. IND: New Age International.

[19] Temitope, O. A. (2016). Forensic accountant's responsibility competency a panacea to narrowing audit expectation gap among nigeria money deposit banks. *European Journal of Business, Economics and Accountancy*, 4(2), 20–36. www.idpublications.org

[20] Olaoye, C.O., Ogundipe, A.A., Dada, R.A., 2018. Formal Education and Forensic Accounting Development in Nigeria. Acta Universitatis Danubis. *Economica* 15

[21] Abdulrahman, M.H.A., Yajid, M.S.A., Khatibi, A., Azam, S.M.F., 2020. The Impact of Forensic Accounting on Fraud Detection in the UAE Banking Sector: A Study on Islamic and Conventional

Banks. *European Journal of Economic and Financial Research* 3, 26. https://doi.org/10.5281/zenodo.3714186

[22] Rehman, A., Hashim, F., 2019. Impact of Mature Corporate Governance on Detective Role of Forensic Accounting: Case of Public Listed Companies in Oman. *KnF, Social Sciences* 637-665, https://doi.orp/10.18502/kss.v3i22.5080

[23] Manas Chakrabarti, "Problems and Prospects of Forensic Accounting Profession in India", *International Journal of Informative & Futuristic Research*, vol. 2, issue 1, September 2014, ISSN(o): 2347-1697.

[24] Kumar, C.M.G., Dr Devesh, 2020. Forensic Accounting: A Tool to Curb Financial Crimes | Studies in Indian Place Names, https://archives.tpnsindia.org/index.php/sipn/article/view/4146

[25] Garrow, N.S., Awolowo, I.F., Growe, G.A., 2019. Annual Reports: Fact or Fiction? Are There Governance Implications? *Journal of Leadership, Accountability and Ethics* 16. https://doi.org/10.33423/jlae.v1611.1360

[26] Roy, M., Saha, S., 2016. Statutory Auditors Independence in India: An Empirical Analysis from the Stakeholders Interest Perspective. *Vikalpa* 41. https://doi.org/10.1177/0256090915626791

[27] Manikandan, A., 2019. Rs 71,500 crore worth of bank frauds detected in FY19: RBI report [WWW Document] *The Economic Times,* https://economictimes.indiatimes.com/news/economy/finance/bank-fraud-touchesrs-71543- crore-in-2018-19-rbi-annual-report/articleshow/70895326.cms

[28] KPMG, K., 2019. Forensic audit of Non Performing Assets: Navigating hidden threats 16.

[29] https://www.business-standard.com/article/economy-policy/amount-in-bank-fraud-up- 159-to-rs-1-85-tmn-in-2019-20-rbi-annual-report-120082500972_1.html

[30] Ramamoorti, S., Epstein, B. J., Dorrell, D. D., & Varadarajan, V. (2017). The Proof of Cash Should be King among Forensic Auditing Techniques. *Journal of Forensic & Investigative Accounting*, 9(2), 113-145.

[31] Nigrini, M.J., 2011. Forensic Analytics: Methods and Techniques for Forensic Accounting Investigations, 1st ed. John Wiley & Sons. https://doi.org/10.1002/9781118386798

[32] Simha, A., & Satyanarayan, S. (2016). Straight from the Horse's mouth: Auditors' on Fraud Detection and Prevention, Roles of Technology, and White-Collars Getting Splattered with Red!. *Journal of Accounting and Finance*, 16(1), 26-44.

[33] Jensen, M.C. & Meckling, W.H., 1976. Theory of the firm: Managerial Behaviour, Agency costs, and Ownership Structure. *Journal of Financial Economics*, Volume 3, pp. 305-360.

[34] Cressey, D. R., 1950. The criminal violation of financial trust. *American Sociological Review*, 15(6), pp. 738-743.

[35] ICAEW, 2005. Agency Theory and the Role of Audit, London: Audit Quality

[36] Cuervo, A., 2002. Corporate Governance Mechanisms: a plea for less code of goodgovernance and more market control. *Corporate Governance*, 10(2), pp. 84-93.

[37] Mueller, F., Carter, C. & Whittle, A., 2015. Can Audit (Still) be Trusted?, *Organization Studies*, 36(9), pp. 1171-1203.

[38] Sikka, P., 2009. Financial crisis and the silence of the auditors. *Accounting, Organizations and Society*, Volume 34, pp. 868-873.

[39] Donaldson, L. & Davis, J.H., 1991. Stewardship Theory or Agency Theory: CEO governance and shareholder returns. *Australian Journal of Management*, Volume 16, pp. 49-65.

[40] Albrecht, W. S., Albrecht, C. C. & Albrecht, C. O., 2004. Fraud and Corporate Executives: Agency, Stewardship and Broken Trust. *Journal of Forensic Accounting*, Volume 5, pp. 109-130.

[41] Chariri, A., 2008. Questioning the Popularity of Agency Theory in Accounting Research. *Journal of Economics and Busniess*, XIV(1), pp. 1-14.

[42] Choo, F. & Kim, T., 2007. An "American Dream" Theory of Corporate Executive Fraud. *Accounting Forum*, Volume 31, pp. 203-215.

[43] Arnold, B. & de Lange, P., 2004. Enron: an examination of agency problems. *Critical Perspectives on Accounting*, Volume 15, pp. 751-765.

[44] Centre for Audit Quality, 2010. Deterring and detecting Financial Reporting Fraud: A platform for Action, Washington: Center for Audit Quality.

[45] Auditor of Public Accounts, 2011. The Fraud Triangle, Virginia: Auditor of Public Accounts, Commonwealth of Virginia.

[46] Albrecht, S., 2014. Iconic Fraud Triangle Endures. *Fighting a Culture of Fraud*, July/August, Issue 4, pp. 46-52.

[47] Cressey, D.R., 1953. Other People's Money: The Social Psychology of Embezzlement. New York: The Free Press.

[48] Abdullahi, R. & Mansor, N., 2015. Fraud Triangle Theory and Fraud Diamond Theory. Understanding the Convergent and Divergent for Future Research. *International Journal of Academic Research in Accounting, Finance and Management Science*, 5(4), pp. 38-45.

[49] Wells, J.T., 2004. The Corporate Fraud Handbook: Prevention and Detection. Hoboken, NJ: John Wiley and Sons.

[50] Kelly, P. & Hartley, C.A., 2010. Casino gambling and workplace fraud: a cautionary tale for managers. *Management Research Review*, 33(3), pp. 224-239.

[51] Wolfe, D.T. & Hermanson, D.R., 2004. The Fraud Diamond: Considering the Four Elements of Fraud. *The CPA Journal*, 74(12), pp. 38-42.

[52] Albrecht, S., Howe, K. & Romney, M., 1984. Deterring fraud: the internal auditor's perspective. *Institute of Internal Auditors Research Foundation*, pp. 1-42.

[53] Jain, E., & Lamba, J. (2020). Forensic Accounting: A Way to Fight, Deter and Detect Fraud. *IARS International Research Journal* 10/1.

A Bibliometric Analysis of Digital Financial Services

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Abstract

It is evident that the field of digital financial services has experienced significant growth and development from 2019 to 2023. The substantial annual growth rate of 19.76% reflects the increasing interest and importance of this domain within the financial industry. The collection of 397 documents from 297 diverse sources further emphasizes the breadth of research and knowledge being generated in this field. The average age of the documents, at 1.6 years, indicates that the research is relatively recent and up-to-date, which is crucial in a rapidly evolving field like digital financial services. Moreover, the average number of citations per document (3.35) highlights the impact and recognition of the research within the scientific community, suggesting that the findings are contributing to the advancement of knowledge and understanding in this area. The presence of 48 unique keywords demonstrates the diverse range of topics and themes being explored within digital financial services. The collaborative nature of the research is also noteworthy. Furthermore, the presence of international co-authorships (8.816%) signifies global collaboration and exchange of ideas, underscoring the international relevance and applicability of digital financial services.

Keywords: *Digital Financial Services, Bibliometric, Graphic Analysis.*

INTRODUCTION

Digital financial services (DFS) play a crucial role in promoting financial inclusion, offering vital solutions to address this issue (Buckley and Malady, 2015). By utilizing advanced technologies, digital platforms, and electronic payment systems (Scott et al., 2017; David-West et al., 2018), DFS enables the provision of services to underprivileged individuals. These digital channels have the potential to significantly reduce costs for both customers and service providers, particularly benefiting isolated and underserved communities (Baker et al., 2007; Alam and Imran, 2015; Lloyds et al., 2016; Tarhini et al., 2016; AFI Global, 2017; Thorseng and Grisot, 2017). The widespread adoption of digital technologies has the power to lift millions of people out of poverty each year stated the Gates Foundation, 2017. However, a considerable portion of the global population remains impoverished due to various challenges such as health issues, financial constraints, and unexpected circumstances. Unfortunately,

many individuals living close to or below the poverty line lack access to even the most basic banking services.

Statistics indicate that only 16% of individuals earning less than $2 per day possess formal bank accounts. This situation is even more dire for women and those residing in rural areas. According to the World Bank's Global Financial Inclusion database, approximately 2.5 billion people worldwide do not hold accounts with any financial institution. Consequently, these individuals face significant obstacles when conducting financial transactions through electronic means. According to Gates Foundation, 2017, as a result, the most economically disadvantaged households continue to rely primarily on cash, personal assets, and informal money lenders to fulfill their daily financial needs.

Over the past decade, financial services targeting the underprivileged have undergone a significant transformation. Technological advancements have paved the way for new business models and the potential for digital financial services (DFS) to play a central role in future financial transformations (Mattern and McKay, 2018). DFS encompasses a wide range of advanced technologies, including mobile phone-enabled solutions and structured electronic payment platforms (David-West et al., 2018). In essence, DFS refers to a diverse array of services accessible and delivered through digital channels, such as credit, payments, savings, insurance, and more. These services are facilitated by electronic devices like cards, chips, tablets, phablets, biometric devices, and other electronic systems (AFI Global, 2016). DFS offers increased flexibility to customers in accessing financial services.

In less-developed countries, DFS has the potential to expand financial service participation, particularly among rural customers who previously lacked access to banking and financial services (Finau et al., 2016). However, the literature indicates that customers in less developed and developing countries often encounter barriers to adopting and utilizing DFS, including mobile phone-based solutions, digital payment platforms, and electronic money models. For instance, Lauer and Lyman (2015) identified risks associated with digital services, such as mobile-based banking, electronic money, and digital payment platforms, as a challenge for DFS among digitally excluded or underserved populations. Fatima (2011) highlighted issues of safety, reliability, privacy, and weak authentication processes as additional challenges. Harsh and Wright (2016) discussed obstacles such as limited awareness, lack of knowledge about the benefits of DFS, low digital literacy, and technological and networking issues. Other challenges include inadequate training and skills for agents and mobile network operators (MNOs), legal and regulatory concerns (Chauhan, 2015), difficulty keeping up with new technologies (Holley, 2015), high costs and low returns (Microsave, 2016), limited internet availability (Wright et al., 2013), failure to reach a significant portion of consumers, lack of integration and interoperability, lack of trust, dormancy issues, inability to transact in low-value amounts, and gender disparities in mobile ownership (Briggs, 2016).

While approximately 8-10% of households in the UK, 10-15% in the USA, and 7-10% in France do not possess bank accounts, the situation is far more severe in developing nations, where a significant proportion (25-65%) of households face disadvantages due to the lack of basic bank accounts (Sundaram and Sriram, 2016). In India, Prime Minister Narendra

Modi initiated a digitization program on July 1st, 2015, with the primary objective of providing online connectivity to rural areas through the establishment of high-speed network infrastructure. The government has also been working on creating an efficient unified payment structure to facilitate fast and secure service transfers to recipients (Rani, 2016). However, according to the Intermedia Financial Inclusion Insight (FII) survey conducted in 2014, only 0.3% of Indian adults were found to be using mobile money (Kumar, 2015), indicating a vast untapped potential for innovative technologies in DFS (Ahluwalia and Bhatti, 2017). Currently, DFS adoption in India is limited due to various significant challenges, including inadequate infrastructure, lack of trust, insufficient knowledge, and additional costs (Dwivedi et al., 2016). The subsequent section will delve into the key challenges faced by DFS in emerging economies.

RESEARCH OBJECTIVES

The research objectives are given below.

1. To identify the author(s) and journal(s) that have made significant contributions to research on digital financial services by assessing the impact and relevance of their published work.
2. To determine the research area(s) that have published the most work on digital financial services and the prevalent document type(s) utilized in these publications.
3. To identify the most prominent publication affiliation(s) for papers on digital financial services by investigating the institutions or organizations associated with the highest number of publications in this field.
4. To ascertain which countries are at the forefront of publishing papers on digital financial services by examining the distribution and concentration of publications across different nations.
5. To investigate the keyword and citation networks related to digital financial services by analyzing the co-occurrence of keywords in published articles and examining the citation patterns between relevant research papers in this field.

THEORETICAL BACKGROUND

According to IFC, the digitization of financial services has been ongoing for several decades, with certain products like retail brokerage adopting digital channels as early as 20 years ago. However, the industry's radical transformation was delayed due to the market advantages enjoyed by traditional financial services providers. These advantages included the trust established with customers, regulatory barriers that limited competition in banking and insurance, and supervisory approaches that favored internalizing the entire value chain. The 2008 financial crisis eroded trust in financial institutions, leading to regulatory responses that imposed higher capital requirements and increased compliance costs. As a result, it became more challenging and costly for banks to provide lending services. Paradoxically, this situation created an opportunity for technology-enabled non-banks with fewer regulatory restrictions to flourish. These non-banks could offer financial services at lower costs and with

greater efficiency compared to incumbents burdened by legacy infrastructure and regulatory constraints.

Furthermore, the digital transformations observed in other industries have increased customer trust in and comfort with technology-based financial solutions. This has also amplified their expectations for immediate access to customized products and services. Prominent FinTech companies have emerged to meet these consumer demands by providing low-cost and convenient solutions for money transfers, borrowing, and investing. It is important to note that the impact of FinTech on financial services extends beyond retail and customer-facing applications, influencing all aspects of the financial services production process.

The annual Measuring the Information Society Report (2017) indicates that mobile cellular networks have achieved wide coverage, reaching the majority of the global population, with mobile phone signals available in areas where 95% of the world's population resides. However, despite the fact that 47% of the world's population had online internet access by 2016, a significant portion of the population still lacks connectivity. David West et al. (2018) introduction of Digital Financial Services (DFS) aims to address the issue of financial exclusion among the under-banked and unbanked populations in developing and emerging market economies.

The mobile phone has emerged as the preferred means not only for communication but also for conducting digital financial activities. However, there remains a lack of mobile wallet-based payment systems in the developing world, as highlighted by various studies (Buckley and Mas, 2016; Tarhini et al., 2016; Ashraf et al., 2017; Patil et al., 2017; Asongu and Nwachukwu, 2018; Sharma et al., 2018). For instance, in India, despite 75% of the population owning mobile phones, 60% of the 1.2 billion population are under-banked. Cash transactions are still preferred by approximately 67% of Indians, and only 10% of the population uses debit/credit cards, while informal channels like Hawalas (money transfers without physical movement of funds) are relied upon by the majority according to Amarante Consulting Group, 2014.

RESEARCH METHODOLOGY

The methods section encompasses the following components: research methodology establishment and data set extraction, and formulation of research questions.

This study primarily aims to conduct a bibliometric analysis of papers related to Digital Finance Services, which are indexed in the Dimension database. In order to achieve this objective, a set of research questions has been formulated to provide answers. The table below, Table 1, presents these questions along with their respective significance.

Table 1: Research Questions with their Significance

S. No.	*Research Questions*	*Significance*
1	What is the annual trend in publications about digital financial services?	Analyzing the yearly volume of publications on digital financial services can provide insights into future trends in this field.

S. No.	*Research Questions*	*Significance*
2	Which author and journal have made significant contributions to research on digital financial services?	Identifying the authors and journals that have contributed the most to research on digital financial services can assist researchers in finding specific studies, methodologies, and resources for conducting high-quality research in this area.
3	Which research area and document type have published the most work on digital financial services?	Examining the areas and document types that have published the highest amount of research on digital financial services can help identify the research efforts in different domains and document formats. This information can 4guide researchers in identifying future research directions.
4	What is the most prominent publication affiliation for papers on digital financial services?	Determining the leading publication affiliations for digital financial services papers can assist researchers in selecting appropriate conferences, universities, and journals to publish their research work. It may also impact the future citation rates of their papers.
5	Which countries are at the forefront of publishing papers on digital financial services?	Understanding which countries are prioritizing research on digital financial services provides researchers and practitioners with insights into the geographical focus of this field. This knowledge can offer opportunities for contributing research work in those countries for future publications.
6	What are the keyword and citation networks related to digital financial services?	Analyzing the keyword and citation networks associated with digital financial services can provide an efficient search method for future researchers, enabling them to explore relevant literature more easily.

RESULTS AND DISCUSSION

Bibliometric studies are commonly classified into three categories: review techniques, evaluative techniques, and relational techniques (Benckendorff and Zehrer, 2013). Evaluative techniques aim to assess the academic impact and relative influence of a particular topic. These techniques involve various measures of productivity, such as tracking the historical growth of publications, analyzing the distribution of articles across journals and individual authors, and identifying the most frequently cited authors (Hall, 2011). The analysis of author contributions also provides insights into the relative maturity of a research topic (Keathley-Herring et al., 2016). These analyses have been conducted using tools like Biblioshiny software.

Relational techniques, such as co-citation, co-authorship, and co-word analyses, are commonly employed to uncover the intellectual structure of a research topic. Both co-citation and co-word techniques are suitable for our analysis, enabling the identification of patterns and identification of emerging topics (Zupic and Cater, 2015). The VOS-Viewer software (Van Eck and Waltman, 2010) provides a mapping tool that visually represents the results of these bibliometric techniques in a user-friendly manner.

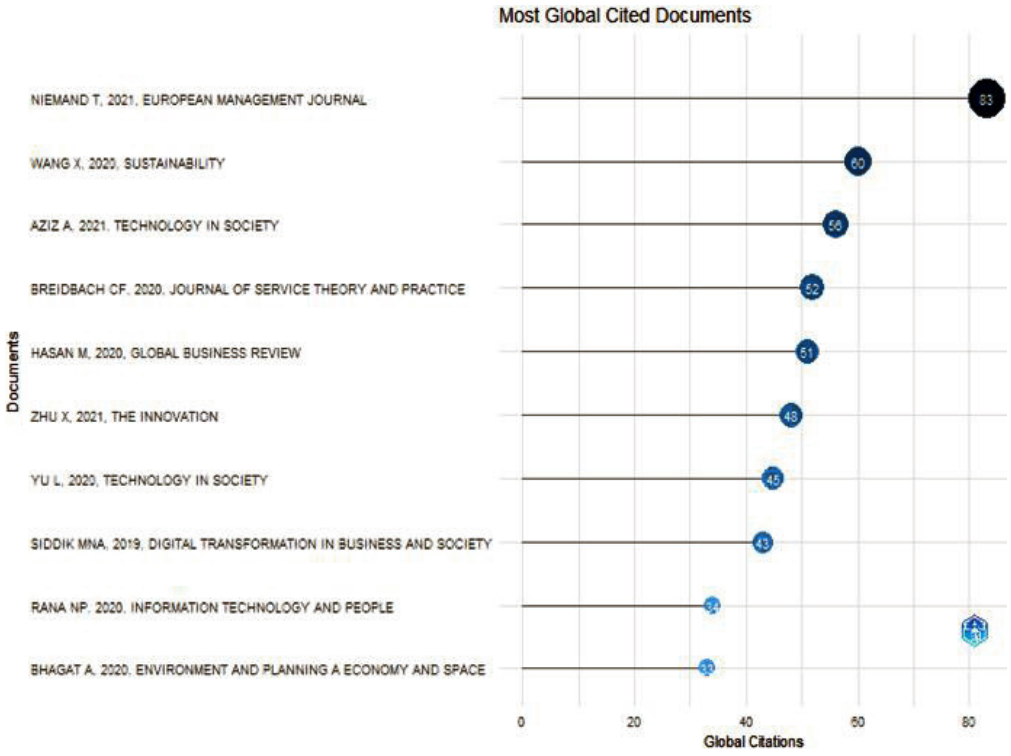


Figure 1: Most Globally Cited Document

The provided dataset offers insights into citation metrics for research papers in the field of digital financial services. The top 10 papers in the dataset are as follows: "Niemand T, 2021, European Management Journal" with 83 total citations, an average of 27.67 citations per year, and normalized citations of 18.17. "Wang X, 2020, Sustainability" received 60 total citations, with 15 citations per year and normalized citations of 6.82. "Aziz A, 2021, Technology in Society" garnered 56 total citations, 18.67 citations per year, and normalized citations of 12.26. "Breidbach CF, 2020, Journal of Service Theory and Practice" obtained 52 total citations, an average of 13 citations per year, and normalized citations of 5.91. "Hasan M, 2020, Global Business Review" received 51 total citations, 12.75 citations per year, and normalized citations of 5.80. "Zhu X, 2021, The Innovation" attained 48 total citations, 16 citations per year, and normalized citations of 10.51. "Yu L, 2020, Technology in Society" received 45 total citations, an average of 11.25 citations per year, and normalized citations of 5.12. "Siddik MNA, 2019, Digital Transformation in Business and Society" garnered 43 total citations, 8.6 citations per year, and normalized citations of 7.84. "Rand NP, 2020, Information Technology and People" obtained 34 total citations, with 8.5 citations per year and normalized citations of 3.87. Lastly, "Bhagat A, 2020, Environment and Planning a Economy and Space" received 33 total citations, 8.25 citations per year, and normalized citations of 3.75. These details encompass the paper title, total citations, citations per year, and normalized citations, which reflect the number of citations per year adjusted for the time since publication.

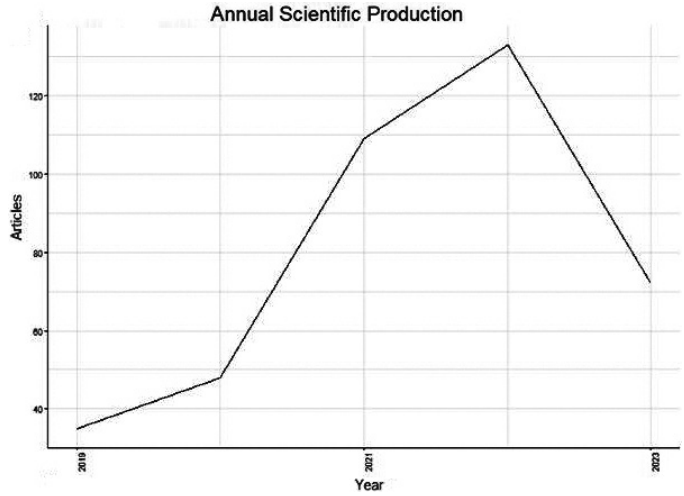


Figure 2: Annual Scientific Production

The data provided represent the annual scientific production in the field of digital financial services across different years. In 2019, there were 35 articles published on this topic, followed by 48 articles in 2020. The year 2021 saw a substantial increase in scientific output, with 109 articles published. This trend continued in 2022, with the highest number of articles recorded at 133. As of the current year, 2023, there have been 72 articles published on digital financial services. These numbers indicate a growing interest and research activity in the field, showcasing the significance of digital financial services and its evolving landscape. The increasing number of publications demonstrates the ongoing exploration and advancements in this area, potentially leading to new insights, innovations, and developments in the field of digital financial services.

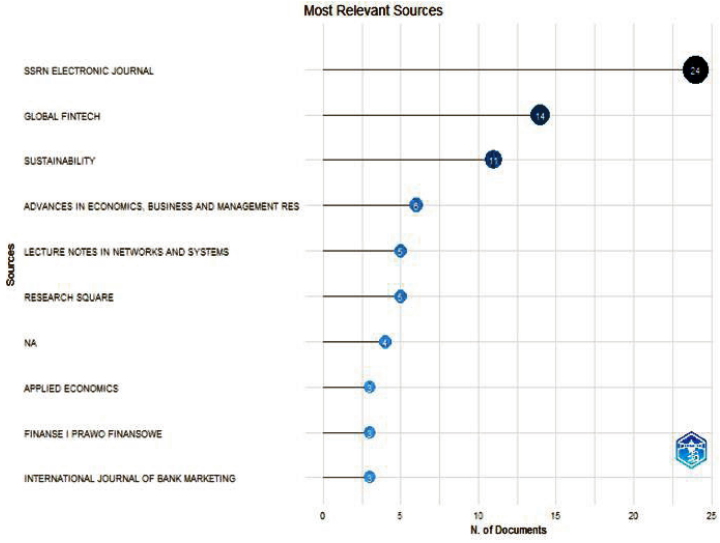


Figure 3: Most Relevant Source

The provided data presents the distribution of articles related to digital financial services across various sources. The most relevant source for research papers in this field appears to be the "SSRN Electronic Journal," with 24 articles identified. Following that, "Global Fintech" and "Sustainability" are also significant sources, with 14 and 11 articles, respectively. Other sources such as "Advances in Economics, Business and Management Research," "Lecture Notes in Networks and Systems," and "Research Square" contribute to the research literature with 6, 5, and 5 articles, respectively. It is important to note that there are also 4 articles listed under the category "NA," which likely indicates missing or unspecified source information. The distribution of articles across these sources highlights the range of publications and platforms where researchers have disseminated their work on digital financial services. Researchers and practitioners interested in this field may find value in exploring these sources to access relevant and up-to-date research articles.

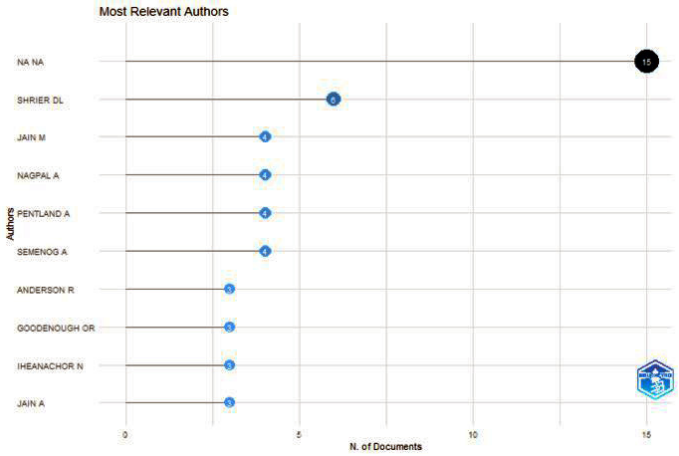


Figure 4: Most Relevant Author

The provided data presents information about the authors and their contributions to research articles in the field of digital financial services. The authors are listed along with the number of articles they have published and their fractionalized contributions. Among the authors mentioned, there is one entry labeled as "NA NA" with 15 articles. The fractionalized value for this entry is also 15, indicating that these articles were not fractionalized among multiple authors but attributed to a single entity. Several authors have contributed to a varying number of articles. Some notable authors include the Shrier DL: Shrier DL has published 6 articles with a fractionalized contribution of 2.666666667. Jain M: Jain M has authored 4 articles with a fractionalized contribution of 1.5. Nagpal A: Nagpal A has published 4 articles with a fractionalized contribution of 1.5. Pentland A: Pentland A has contributed to 4 articles with a fractionalized contribution of 1.166666667. Semenog A: Semenog A has authored 4 articles with a relatively high fractionalized contribution of 2.642857143. Other authors have contributed to a range of articles with varying fractionalized values. It is important to note that the fractionalized values represent the proportion of contribution by each author to the respective articles.

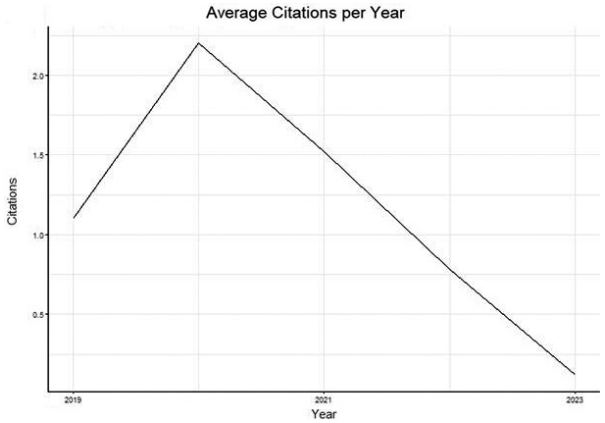


Figure 5: Average Citations Per Year

The provided data pertains to average citations per year in the field of digital financial services across different years. In 2019, the average number of citations per year per article was 1.1, with a total of 35 articles analysed. These articles had an average of 5 years of citable lifespan. In 2020, the average citations per year increased to 2.2, with 48 articles included in the analysis. The average citable lifespan for these articles was 4 years. However, in 2021, the average citations per year decreased to 1.52, despite a higher number of articles at 109. The average citable lifespan for these articles reduced to 3 years. In 2022, the average citations per year dropped further to 0.78, with 133 articles included and an average citable lifespan of 2 years. Finally, as of 2023, the average citations per year reached a significantly lower value of 0.12, with 72 articles analysed, and a citable lifespan of only 1 year. These findings suggest variations in citation patterns over time, with a declining trend observed in recent years. The decreasing average citations per year may indicate a shift in research focus or other factors influencing the citation impact in the field of digital financial services.

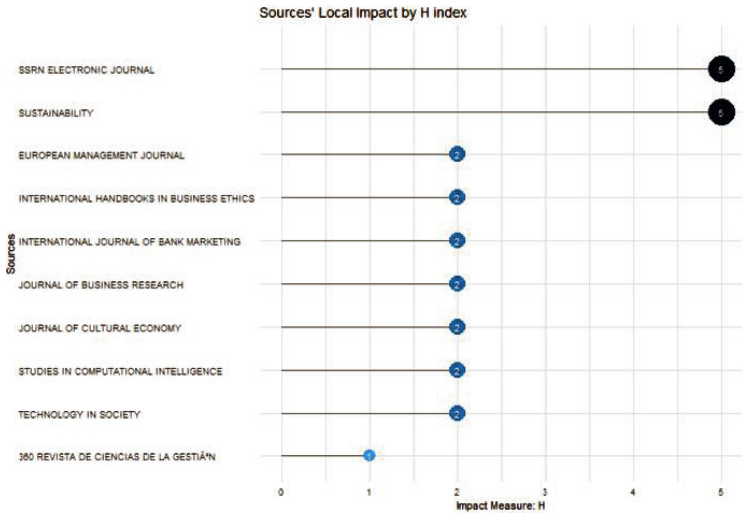


Figure 6: Source's Local Impact by H Index

The provided data offers information on the local impact of various sources in the field of digital financial services, as measured by the h-index. The h-index represents the highest number of articles, h, that have received at least h citations. Among the listed sources, "SSRN Electronic Journal," "Sustainability," "European Management Journal," "International Handbooks in Business Ethics," "International Journal of Bank Marketing," "Journal of Business Research," "Journal of Cultural Economy," "Studies in Computational Intelligence," and "Technology in Society" all have an h-index of 2, indicating that they have published at least 2 articles that have received 2 or more citations each. Other sources, such as "360 Revista de Ciencias de la Gestión," "Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application," "Advances in Economics, Business and Management Research," "Advances in Finance, Accounting, and Economics," "Advances in Intelligent Systems and Computing," "Advances in Logistics, Operations, and Management Science," "African Development Review," "African J of Accounting Auditing and Finance," "Applied Economics," and "ArXiv" have an h-index of 1, indicating they have published at least 1 article that has received 1 or more citations. The h-index provides a measure of the local impact of these sources within the field of digital financial services, reflecting the number of highly cited articles they have produced. Researchers and practitioners may consider these sources as potential outlets for accessing influential and relevant research in the domain of digital financial services.

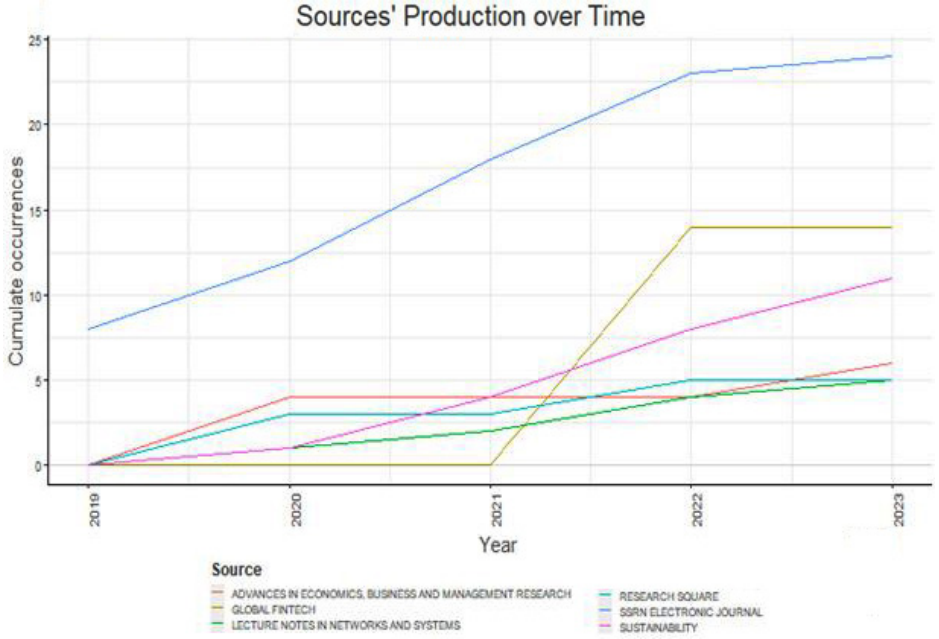


Figure 7: Source's Production Over Time

The provided data illustrates the production of research articles in the field of digital financial services over a span of five years, categorized by different sources. In 2019, the "SSRN Electronic Journal" was the most productive source with 8 articles, while the other

sources did not contribute any articles specifically related to digital financial services during that year. In 2020, there was an increase in the overall production of articles across various sources. The "SSRN Electronic Journal" remained the most prolific source with 12 articles, followed by "Advances in Economics, Business and Management Research" with 4 articles. The sources "Sustainability," "Lecture Notes in Networks and Systems," and "Research Square" also published a few articles in this year. The production of articles further increased in 2021. The "SSRN Electronic Journal" maintained its leading position with 18 articles, while "Sustainability" witnessed a notable increase, publishing 4 articles. Other sources such as "Advances in Economics, Business and Management Research," "Lecture Notes in Networks and Systems," and "Research Square" continued to contribute to the literature in digital financial services. In 2022 and 2023, the production of articles across all sources reached its peak. The "SSRN Electronic Journal" and "Global Fintech" emerged as the most productive sources, publishing 23 and 14 articles respectively in 2022, and maintaining the same number of articles in 2023. "Sustainability" also demonstrated a significant increase in its output, publishing 11 articles in 2023. Other sources, including "Advances in Economics, Business and Management Research," "Lecture Notes in Networks and Systems," and "Research Square," continued to contribute a steady number of articles during these years. Overall, the data highlights the evolving research landscape in digital financial services, with an increasing number of articles being published over the years. The "SSRN Electronic Journal" consistently remained one of the most prolific sources throughout the given period, while other sources exhibited varying levels of production. These findings reflect the growing interest and research activity in the field of digital financial services.

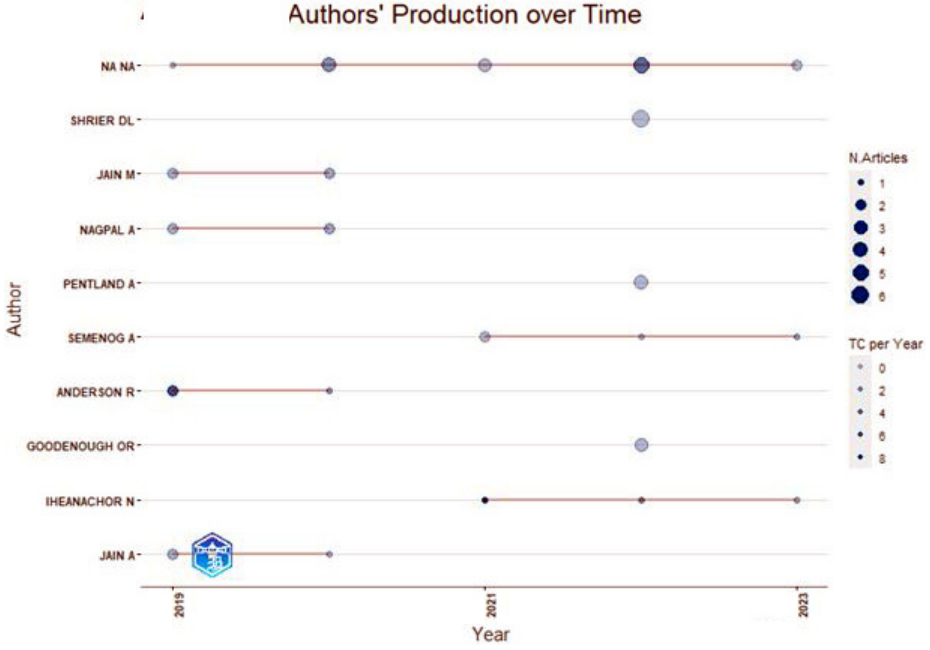


Figure 8: Author Production Over the Time

The provided dataset consists of research articles related to digital financial services and their production over time, along with information on the authors and their publications. The data spans from 2019 to 2023. Several articles are labeled as "NA NA," indicating that author information is not provided. These articles cover various topics related to digital financial services, such as inclusion in rural areas, blockchain technology adoption, digital economy, business analytics, and big data analytics applications. The publications are sourced from different journals and conferences, including Global Fintech, Sustainability, Review of Contemporary Philosophy, and more. The dataset also includes the total citations (TC) and total citations per year (TCpY) for some articles. The dataset showcases the research output of authors in the field of digital financial services, their areas of focus, and the frequency of publications over the years.

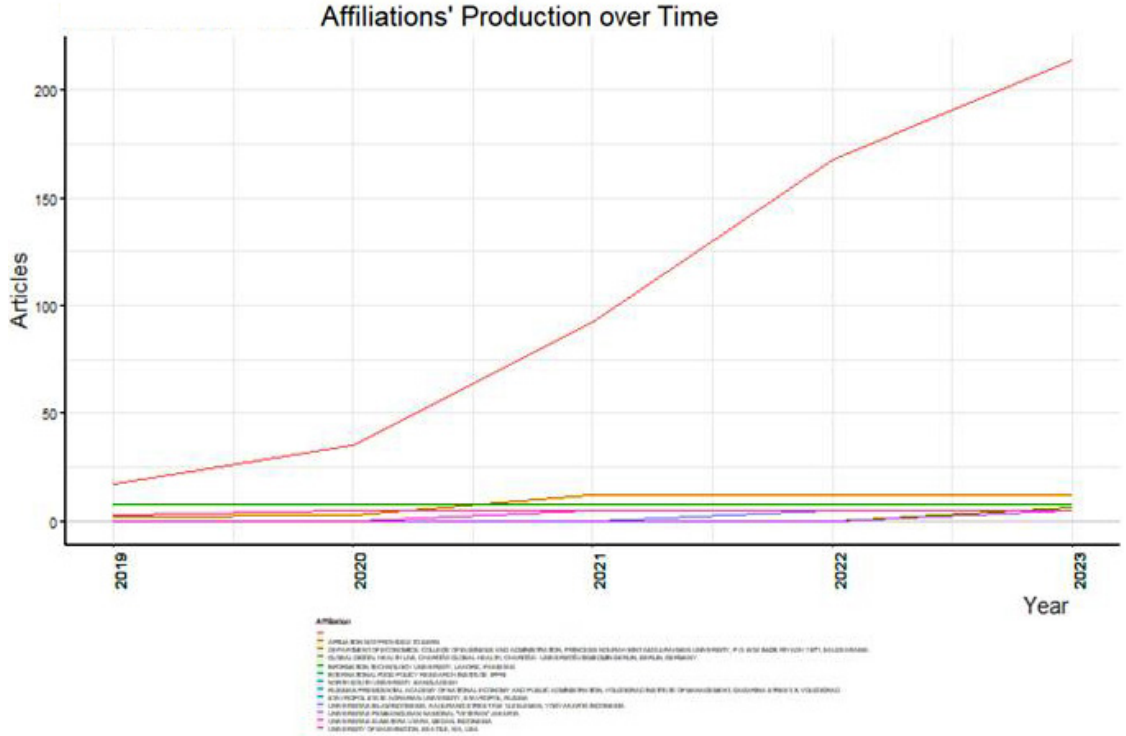


Figure 9: Affiliation's Production Over the Time

The dataset provides information on the production of articles related to digital financial services across various affiliations from 2019 to 2023. The data reveals different patterns in publication output among the affiliations. Notably, some institutions, such as the Information Technology University in Lahore, Pakistan, maintained a consistent publication rate throughout the years. Other affiliations, like the Russian Presidential Academy of National Economy and Public Administration and several Indonesian universities, started publishing articles from 2021 or 2022 and consistently contributed 5 articles per year. Meanwhile, certain affiliations, including the University of Washington and the International Food Policy

Research Institute, exhibited a steady publication output across all years. Overall, the dataset demonstrates varying levels of engagement and research productivity in the field of digital financial services among different affiliations over time.

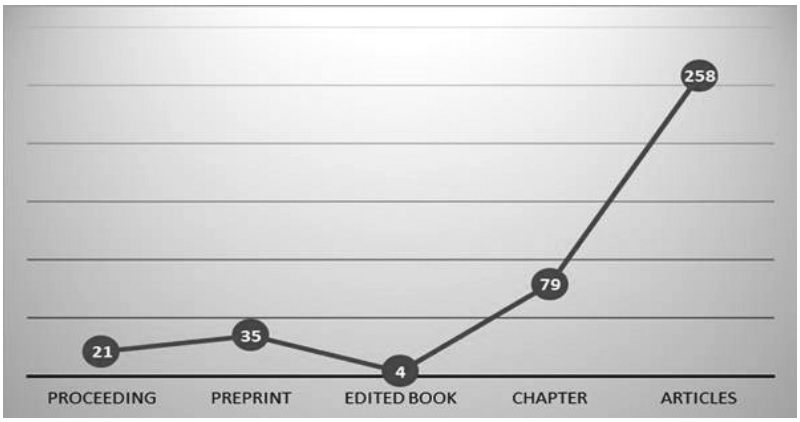


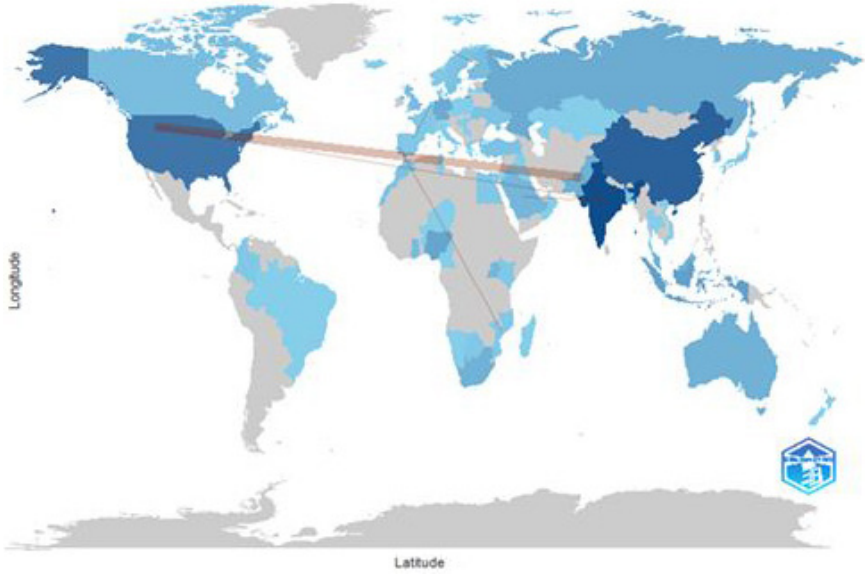
Figure 10: Number of Documents

There are 21 proceedings related to digital financial services. Proceedings typically consist of papers presented at conferences or symposiums, showcasing the latest research and developments in the field. These proceedings serve as a platform for researchers and industry professionals to share their findings and insights. There are 35 preprints in the field of digital financial services. Preprints refer to research papers that have been made available to the public before undergoing formal peer review. They allow researchers to disseminate their work quickly and receive feedback from the community, promoting collaboration and knowledge sharing. 4 edited books focusing on digital financial services. Edited books are compilations of chapters written by different authors, usually curated by an editor or a group of editors. In the context of digital financial services, these edited books likely provide comprehensive coverage of various aspects of the field, offering insights and perspectives from multiple authors. There are 79 chapters specifically dedicated to digital financial services. Chapters typically appear in edited books or academic volumes, where each chapter focuses on a specific topic or aspect of the subject matter. These chapters provide more in-depth analysis and exploration of various dimensions of digital financial services, such as regulatory frameworks, technological advancements, or case studies. The largest category, with 258 articles, encompasses research papers published in academic journals or other scholarly publications. Articles are commonly used to communicate research findings, methodologies, and theoretical frameworks to the academic community. In the context of digital financial services, these articles likely cover a wide range of topics, including emerging trends, challenges, and opportunities within the field. Overall, this distribution of document types indicates a diverse and comprehensive body of research in the domain of digital financial services. The presence of proceedings, preprints, edited books, chapters, and articles demonstrates the multidimensional and evolving nature of the field, with researchers disseminating their work through various channels to reach different audiences and contribute to the collective knowledge in digital financial services.



Figure 11: Keyword Analysis

The presence of 48 unique keywords demonstrates the diverse range of topics and themes being explored within digital financial services. This indicates that researchers are examining various aspects of this domain, such as mobile banking, blockchain technology, fintech innovations, digital payment systems, and cybersecurity, among others. This wide range of keywords reflects the multidimensionality and complexity of the subject matter. The provided word occurrences encompass various terms related to different topics. The list includes "humans" appearing 5 times, "female" and "adult" each appearing 4 times, and "male" and "rural population" each appearing 3 times. Other terms with a frequency of 2 include "China," "cross-sectional studies," "farmers," "farms," "financial support," and "Madagascar." Additionally, "surveys and questionnaires" appears twice, while the remaining terms appear only once, such as "adolescent," "age factors," "agriculture," "anisotropy," "behavior," "brain," "brain mapping," "child," "choice behavior," "community health workers," "decision making," "developing countries," "economic development," "financial



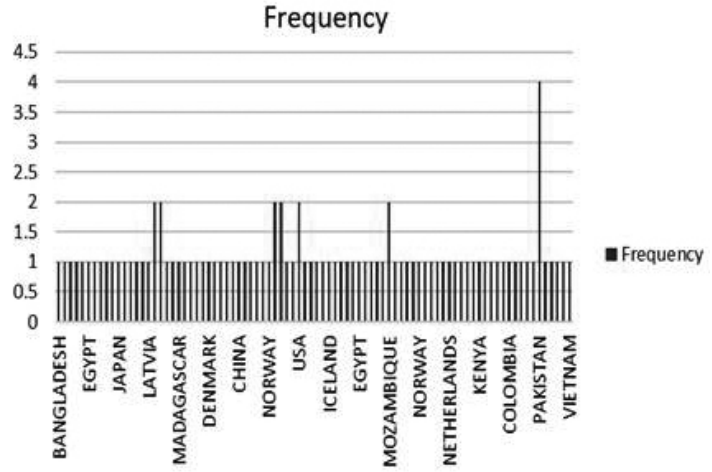


Figure 12: Represent the Relationships and Collaborations Between Countries in the Field of Digital Financial Services

management," "financing personal," "games experimental," "health facilities," "image processing computer-assisted," "Kenya," "magnetic resonance imaging," "Markov chains," "middle-aged," "mobile applications," "national health programs," "neuropsychological tests," "poverty," "pregnancy," "pregnant women," "qualitative research," "sex factors," "socioeconomic factors," "telemedicine," "trust," "video recording," "white matter," and "young adult." These terms represent a diverse range of subjects, reflecting research interests in fields such as health, development, agriculture, and technology.

The map represents the frequency of connections between different countries in the context of digital financial services. Each entry consists of a pair of countries and the frequency of their connections. The data provide insights into the relationships and collaborations between countries in the field of digital financial services. It showcases the extent of international connections and highlights the potential for knowledge sharing, partnerships, and exchange of expertise in this domain.

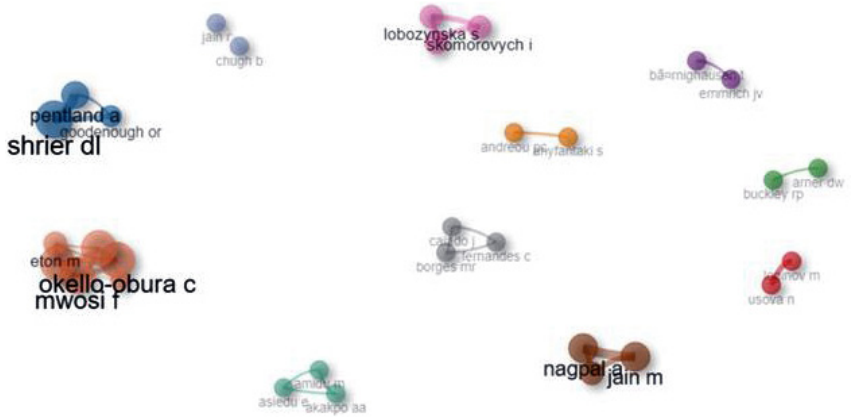


Figure 13: Author's Collaboration Network

The provided data includes various parameters and settings relevant to the visualization and analysis of the author's collaboration network within the context of digital financial services. These parameters encompass the title of the visualization or analysis, the type of automatic determination, the display of labels for nodes, the size and scaling of labels, the utilization of label colors, the maximum number of labels displayed, the presence or absence of halos around labels, the employment of the walk trap algorithm for clustering, the level of repulsion between communities, the size and scaling of nodes, the straight or curved edges connecting nodes, the exclusion of self-loops and isolated nodes, the thickness of the edges, the minimum number of connections for node inclusion, the transparency level of nodes and edges, and the absence of verbose information during visualization or analysis. These parameters collectively define the configuration for studying and visualizing the author collaboration network in digital financial services.



Figure 14: Visualizing the Author Collaboration Network in Digital Financial Services

CONCLUSION

In conclusion, the data presented demonstrate a significant growth rate, an abundance of research output, and a diverse range of topics and collaborations within the field of digital financial services. This reflects the increasing recognition of digital financial services as a vital area of study and innovation, with implications for the financial industry, technology advancements, and global economic development. The findings and insights derived from this body of research contribute to enhancing our understanding of digital financial services and pave the way for further advancements and applications in this dynamic field.

FUTURE SCOPE

The future scope of this study on digital financial services is promising and offers several opportunities for further exploration and development. The presented data demonstrate the growth and significance of this field, highlighting the need for continued research and innovation. As technology continues to evolve rapidly, future research can focus on exploring the integration of emerging technologies such as blockchain, the Internet of Things (IoT),

and machine learning into digital financial services. Investigating the potential benefits, challenges, and risks associated with these technologies can provide valuable insights for developing more efficient, secure, and user-friendly digital financial service solutions. Digital financial services encompass various domains, including finance, technology, policy, and social sciences. Future studies can encourage cross-disciplinary collaborations to foster a holistic understanding of digital financial services. Collaboration between researchers, policymakers, industry experts, and consumer advocates can facilitate knowledge exchange, promote innovation, and address the complex challenges in this field. Trust and security are critical factors influencing the adoption and sustained use of digital financial services. Future research can delve deeper into understanding the factors that build trust among consumers, such as data privacy, transparency, and fraud prevention mechanisms. Exploring effective strategies to enhance consumer trust and security can contribute to broader acceptance and adoption of digital financial services.

REFERENCES

[1] AFI Global (2016), AFI digital financial services basic terminology. Kuala Lumpur, Malaysia, 2016.

[2] AFI Global (2017), Digital financial services. Accessed from: http://www.afiglobal.org/policy-areas/digital-financial-services on 25th July 2017.

[3] Ahluwalia, H.S. and Bhatti, K.K. (2017), "Financial inclusion: Unshackle the impediments to growth", *International Journal of Innovative Research and Development*, Vol. 6, No. 1, pp. 82-87.

[4] Alam, K. and Imran, S. (2015), "The digital divide and social inclusion among refugee migrants: A case in regional Australia", *Information Technology & People*, Vol. 28, No. 2, pp. 344-365.

[5] Amarante Consulting Group (2014). "Market study of digital financial services in India", A Summary Report by Amarante Consulting Group, Accessed from: http://amarante consulting.com/upload/publication/Summary%20DFS%20Report%20India%20June%22014_1.pdf on July 27, 2017 on 12th August 2018.

[6] Ashraf, M., Grunfeld, H., Hoque, M.R. and Alam, K. (2017), "An extended conceptual framework to understand information and communication technology-enabled socio-economic development at community level in Bangladesh", *Information Technology & People*, Vol. 30, No 4, pp. 736-752.

[7] Asongu, S. and Nwachukwu, J.C. (2018), "Comparative human development thresholds for absolute and relative pro-poor mobile banking in developing countries", *Information Technology & People*, Vol. 31 No 1, pp. 63-83.

[8] Baker, E.W., Al-Gahtani, S.S. and Hubona, G.S. (2007), "The effects of gender and age on new technology implementtation in a developing country: Testing the theory of planned behavior (TPB)", *Information Technology & People*, Vol. 20 No. 4, pp. 352-375.

[9] Benckendorff, P., Zehrer, A., 2013. A network analysis of tourism research. *Ann. Tour. Res*. 43, 121–149. https://doi.org/10.1016/j.annals.2013.04.005.

[10] Briggs, C. (2016), "The future of banking for the poor: Lessons from India", *Stanford Social Innovation Review*, Accessed from: https://ssir.org/articles/entry/the_future_of_banking _for_ the_poor_lessons_from_india on 26th July 2017.

[11] Buckley, R.P. and Malady, L. (2015), "Building consumer demand for digital financial services–The new regulatory frontier", *Journal of Financial Perspectives*, Vol. 3 No. 3, pp. 122-137.

[12] Buckley, R.P. and Mas, I. (2016), "The coming of age of digital payments as a field of expertise", *Journal of Law, Technology & Policy*, Vol. 71, pp. 71-87.

[13] Chauhan, S. (2015), "Acceptance of mobile money by poor citizens of India: Integrating trust into the technology acceptance model", *Info*, Vol. 17 No. 3, pp. 58-68.

[14] David-West, O., Iheanachor, N. and Kelikume, I. (2018), "A resource-based view of Digital Financial Services (DFS): An exploratory study of Nigerian providers", *Journal of Business Research*, Vol. 88, pp. 513-526.

[15] Dwivedi, Y.K., Sahu, G.P., Rana, N.P., Singh, M. and Chandwani, R.K. (2016), "Common Services Centres (CSCs) as an approach to bridge the digital divide: Reflecting on challenges and obstacles", *Transforming Government: People, Process and Policy*, Vol. 10 No. 4, pp. 511-525.

[16] Fatima, A. (2011), "E-banking security issues-Is there a solution in biometrics?", *Journal of Internet Banking and Commerce*, Vol. 16, No. 2, pp. 1-9.

[17] Finau, G., Rika, N., Samuwai, J. and McGoon, J. (2016). "Perceptions of digital financial services in rural Fiji", *Information Technologies & International Development*, Vol. 12 No. 4, pp. 11-21.

[18] Gates Foundation (2017), "Digital payments can benefit the poor and be good for business", *A Report by Gates Foundation*, accessed from: https://www.gatesfoundation.org/MediaCenter/Press-Releases/2013/09/Digital-Payments-Can-Benefit-the-Poor on 25th July 2017.

[19] Hall, C.M., 2011. Publish and perish? Bibliometric analysis, journal ranking and the assessment of research quality in tourism. *Tour. Manag*. 32 (1), 16–27. https:// doi.org/10.1016/j.tourman.2010.07.001.

[20] Harsh, S. and Wright, G. (2016), "Real and Perceived Risk in Indian Digital Financial Services", accessed from: http://blog.microsave.net/real-and-perceived-risk-in-indian-digital-financial-services on August 16, 2017.

[21] Holley, E. (2015), "Banks scramble to keep up with digital race for pace", accessed from: http://www.bankingtech.com/287492/banks-scramble-to-keep-up-with-digital-race-for pace.

[22] Keathley-Herring, H., Van Aken, E., Gonzalez-Aleu, F., Deschamps, F., Letens, G., Orlandini, P.C., 2016. Assessing the maturity of a research area: Bibliometric review and proposed framework. *Scientometrics* 109 (2), 927–951.

[23] Kumar, K. (2015), "2015 set to be big year for digital financial inclusion in India", accessed from: http://www.cgap.org/blog/2015-set-be-big-year-digital-financial-inclusion-india, CGAP on 26th July 2017.

[24] Lauer, K. and Lyman, T. (2015), "Digital financial inclusion", online available at: http://www.cgap.org/publications/digital-financial-inclusion on 26th July 2017.

[25] Lloyd, A.D., Antonioletti, M. and Sloan, T.M. (2016), "Able but not willing? Exploring divides in digital versus physical payment use in China", *Information Technology & People*, Vol. 29 No. 2, pp. 250-279.

[26] Mattern, M. and McKay, C. (2018), "Building inclusive payment ecosystems in Tanzania and Ghana", *CGAP Focus Note No. 110*, World Bank, Washington, DC. Accessed from: https://openknowledge.worldbank.org/handle/10986/30274 on 30th October 2018.

[27] MicroSave (2016). Customer vulnerability, trust and risk in Indian digital financial services. *MicroSave's Study for the Omidyar Network*. Accessed from: http://blog.microsave.net/ customer-vulnerability-trust-and-risk-in-indian-digital-financial-services/ on 8th November 2018.

[28] Patil, P. P., Dwivedi, Y. K. and Rana, N. P. (2017), "Digital payments adoption: An analysis of literature", In *Conference on e-Business, e-Services and e-Society* (pp. 61-70). Springer, Cham.

[29] Rani, S. (2016). "Digital India: Unleashing prosperity", *Indian Journal of Applied Research*, Vol. 6, No. 4, pp. 238-243.

[30] Scott, S. V., Van Reenen, J. and Zachariadis, M. (2017), "The long-term effect of digital innovation on bank performance: An empirical study of SWIFT adoption in financial services", *Research Policy*, Vol. 46, No. 5, pp. 984-1004.

[31] Sharma, S. K., Mangla, S. K., Luthra, S. and Al-Salti, Z. (2018), "Mobile wallet inhibitors: Developing a comprehensive theory using an integrated model", *Journal of Retailing and Consumer Services*, Vol. 45, pp. 52-63.

[32] Sundaram, N. and Sriram, M. M. (2016). "Financial inclusion in India: A review", *International Journal of Applied Engineering Research*, Vol. 11 No. 3, pp. 1575-1578.

[33] Tarhini, A., El-Masri, M., Ali, M. and Serrano, A. (2016), "Extending the UTAUT model to understand the customers' acceptance and use of internet banking in Lebanon: A structural equation modeling approach", *Information Technology & People*, Vol. 29 No. 4, pp. 830- 849.

[34] Tarhini, A., El-Masri, M., Ali, M. and Serrano, A. (2016), "Extending the UTAUT model to understand the customers' acceptance and use of internet banking in Lebanon: A structural equation modeling approach", *Information Technology & People*, Vol. 29, No. 4, pp. 830-849.

[35] Thorseng, A. A. and Grisot, M. (2017), "Digitalization as institutional work: A case of designing a tool for changing diabetes care", *Information Technology & People*, Vol. 30 No. 1, pp. 227-243.

[36] Van Eck, N., Waltman, L., 2010. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics* 84 (2), 523–538. https://doi.org/10.1007/s11192-009-0146-3.

[37] Wright, G. A. N., Chopra, P., Mehta, S. and Shukla, V. (2013), "Financial inclusion through electronic and mobile banking", *Business, Economy and Finance*. Accessed from: https://www.slideshare.net/MicroSaveConsulting/financial-inclusion-through-embanking on 27th July 2017.

[38 Zupic, I., Cater, ˇ T., 2015. "Bibliometric methods in management and organization". *Organ. Res. Methods* 18 (3), 429–472. https://doi.org/10.1177/1094428114562629.

Green Deposits: An Alternative to Mobilize Finance for a Sustainable Future

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Abstract

As a major transformation in the Banking Industry, paperless banking is on a way forward. The commercial banks are adapting to enhance transparency and ensure that the money goes to the intended cause. Just like a normal Fixed deposit scheme The primary aim of green deposit scheme is that it pays interest to its investors and has a fixed term, address the greenwashing concerns and help augment the flow of credit to green activities/projects. Both cumulative and noncumulative schemes are there now a days. The interest rates on these deposits are comparable to other banks This paper addresses the key concerns, challenges in the regulatory interventions and the relevance of Green Deposits in current parlance. Way forward of the transformation of green deposits has also been suggested and discussed upon.

Keywords: *Green Finance, Sustainability, Climate Change, ESG-Environmental, Social and Governance.*

JEL Classification: G 21, G 23, G 28, Q 56

INTRODUCTION

The development of Green Deposits as a potent tool for raising money for a sustainable future. These deposits have grown in popularity as the globe struggles to deal with the severe issues caused by climate change and present a special way to allocate money for environmental projects. By placing a special emphasis on climate risk mitigation, adaptability, biodiversity management, and nature-based solutions, green deposits have the potential to hasten the transition to a more sustainable economy. The importance of green deposits, the most recent framework from the RBI, and how these deposits could unleash the potential of green sectors while coordinating financial institutions with sustainable development goals will all be covered in this article. For the Corporates green deposits add to the aim of sustainability in treasury activities. For the banks, HSBC in 2020 was the first Bank to launch green deposits and thereafter HDFC bank, DBS Bank, Federal bank, Union Bank of India, IndusInd bank followed and offer competitive interest rates like the Fixed deposit schemes.

Understanding Green Deposits and RBI's Green Deposit Framework

Similar to conventional deposits, green deposits set themselves apart by a key distinction: the money can only be used for environmental projects. By allocating cash to projects that advance environmental goals and climate action, green deposits offer financial support for programs that address the issues caused by climate change. These deposits have grown in popularity on a global scale as central banks and other financial institutions have recognized their potential to support sustainable finance. Some banks issue "green certificate" compatible with sustainable and greener planet.

Reserve Bank of India has created a complete framework for green deposits that will take effect on June 1st, 2023, in recognition of the importance of green finance. Scheduled commercial banks and deposit-taking non-banking finance organizations, such as housing finance companies, are covered by this framework. It tries to allay concerns about "greenwashing," increase funding for green initiatives, and encourage regulated businesses to offer green deposits.

Key Elements of the Framework

The framework put in place by the RBI provides clear guidelines for the issuance and distribution of green deposits. Regulated enterprises are required to implement finance structures for effectively allocating funds to eligible green projects and activities, as well as board-approved policies on green deposits. The money obtained from green deposits must be used in accordance with the official Indian green taxonomy, which includes a number of industries that support environmental sustainability. The salient features of Green deposits can be summarized:

- **Applicability:** To all Scheduled commercial banks, Land development banks, and Non banking finance companies
- **Investment information:** The banks accepting green deposits from customers will have to disclose more information on how they invest these deposits.
- **Policies:** be laid down by the banks
- **Disclosures:** Must be there on websites
- **Third party verification:** Must
- **Eligible sectors:** Energy, Transportation Waste management, afforestation, Biodiversity conservation, etc., to receive green deposits
- **Non-eligible sectors:** Banks will not be allowed to invest green deposit money into business projects involving fossil fuels, nuclear power, gambling, palm oil, tobacco, and hydropower generation.
- **Rupee denomination:** The money deposited in green deposits will be denominated in rupees only. Money can be withdrawn after maturity.

The approach emphasizes transparency and accountability while utilizing green deposits. Regulated entities must submit yearly to independent third-party assurance or verification to

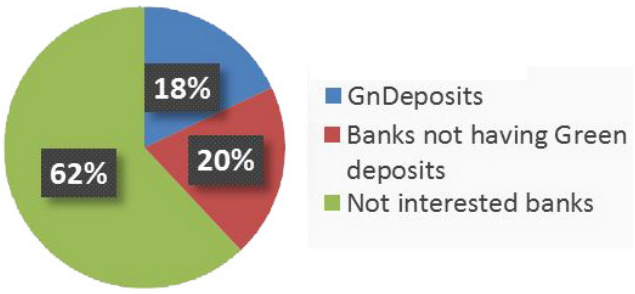


Figure 1: Green Deposits
Source: Authors compilation as per survey conducted

ensure the proper distribution of cash. They must also assess the results of their green finance actions or projects throughan Impact Assessment Report in order to improve accountability and provide stakeholders with meaningful information. By include information on green deposits and related measures in the annual financial statements, transparency is further strengthened.

Green Finance and Green Deposits

In view of the huge investments required the role of the banking and Finance sector is pivotal in supporting India's initiative in adapting to climate change by allocating adequate finance to climate sensitive sectors. ESG investments are in the need of hour as they are compliant and better positioned. Banks are emphasizing the need of these in providing Finance for low carbon and environment friendly investments. To step up this drive, all stakeholders including banks financial institutions, industries, etc., look for clarity regarding Green Finance.

The Benefits of Green Deposits

Investing in green deposits offers a range of benefits.

- Individuals and institutions can directly contribute to India's green transition and environmental sustainability by supporting eligible activities and projects through green deposits.
- Green deposits allow depositors to align their financial goals with their environmental ideals, encouraging ethical investing.
- Green deposits can generate consistent returns over time as sustainable sectors expand and gain importance. assured returns are in anvil if invest in green deposits. HNIS (High Net worth Individuals) can also invest in Green deposits.
- Green deposits help to build green industries by creating jobs and fostering economic resilience.

Green deposits help in the mitigation of climate change, the expansion of green industries, and the provision of consistent returns by providing cash to programs and activities that promote sustainability. Investing in green deposits is not only a wise financial decision, but it also contributes to a greener, more sustainable future.

Challenges of Green Deposits

- **Limited awareness and demand:** One issue is that depositors have limited understanding of or interest in green savings. It is vital to make efforts to educate and raise awareness about the benefits and relevance of sponsoring green initiatives.
- **Availability of appropriate initiatives:** Finding funding for appropriate green initiatives is another challenge. The inclusion of practical programs that support environmental aims is critical to green deposits' viability. To overcome this barrier, efforts to develop and promote sustainable projects must be maintained.
- **Independent verification:** It is critical to independently evaluate the claims made by banks as well as the environmental effects of their investments in order to alleviate concerns about "greenwashing." This builds trust among depositors and ensures transparency, allowing them to make informed decisions.

The Other Challenges will be:

- **Flaws in design:** Flaws in design limit the spectrum of green initiatives in which banks can invest.
- **Reality differs:** Green investment products are frequently used to make investors feel good about themselves, and these investments do little to help the environment.
- **Project sustainability:** It is unclear whether the banks' investments in green initiatives will be long-term.
- **Lack of awareness:** A lack of awareness among bank employees causes a delay in the process of receiving green deposits.
- **Lower interest rate:** The investor is just interested in high-return deposits and is unconcerned about the environment.

Drawbacks of Green Deposits

- **Feel-good scam:** Many experts argue that a green deposit is a way to make investors feel good about themselves as their investments don't do much good to the environment.
- Sustainability is difficult to achieve as impact is only in Long Term

REVIEW OF LITERATURE

Gopi (2016) emphasised on the role of green products in banking particularly the IT transformation at State Bank of India. His research was focussed on the employees and customers of the employees and customers of State Bank of India.. The researcher concluded that banking sector has a major role in environment protection. IT has a major role in implementing green banking. Green initiatives of the bank help in improving the awareness of the customers towards sustainable development. Katyal & Nagpal. (2014) conducted a study on the overall green initiatives of the banking sector in India. Environmental concerns affect the Banking investment and credit decisions. This will certainly help them to improve their environmental performance. Bihari & Pandey, (2015) was of the opinion online mode

of banking is the better way to green and helps in environmental protection. The prominent CSR activities implemented by SBI are Distribution of lakhs of electric fans and water filters in schools in India, financing Save the Child Projects, and promoting green banking by change in traditional paper banking to card based banking and installation of wind mills. Green mortgages, wind mills, green credit cards, power saving equipment's, mobile banking, are green banking products offered by SBI.The researchers concluded that green products to products and services in Banking industry are beneficial to the customers and in growth of the economy. " Go Green " concept was emphasized. (Ahmad et al., 2013) used factor analysis to analyze the data and to draw the findings. They found that six factors namely, economic factor, policy guideline, loan demand, stakeholder pressure, environmental interest and legal factor are the major influencers for the adoption of green banking products by the commercial banks to ensure sustainable economic development.

RESEARCH METHODOLOGY

- **Sources of data:** Both primary and secondary data were used for the purpose of study. Primary data was obtained through surveys conducted in Delhi/NCR city through questionnaires. Secondary data for the study was collected from internet, newspapers, magazines, books, etc.
- **Sample size:** A sample of 200 respondents were selected from Delhi/NCR city through convenience sampling technique.
- **Tools for analysis:** Pie-chart, bar chart, percentage are the tools used for analysis.

LIMITATIONS OF THE STUDY

- Time constraints were the major limitation. Due to short period of research in-depth study could not be made.
- The study was restricted to Delhi/NCR City. So the sample collected may not be representative.
- The information provided by people may be biased.

ANALYSIS

Analysis of the data Awareness of the Green deposits in Banks for sustainability	*No. of respondents from Delhi/NCR*
YES	66%
NO	34%

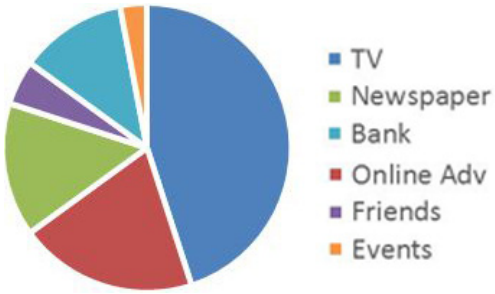
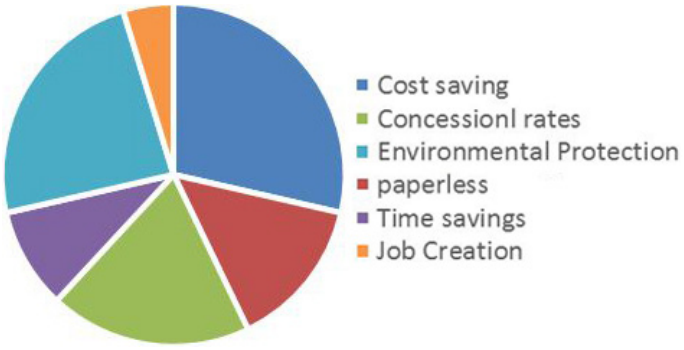


Figure 2: Green Deposits Awareness

Factor	*Green Deposits Awareness in%*
Television	45%
Online advertisements	20%
Newspapers	15%
Friends	5%
Bank	12%
Events by Banks	3%

Source: Author



Cost saving	30%
Paperless	15%
Concessional rates	18%
Time savings	12%
Environmental Protection	20%
Job creation	5%

Figure 3: Benefits from the Green Deposits

CONCLUSION

By encouraging green deposits, the RBI recognizes the critical role that the financial sector can play in mobilizing funds for green initiatives and activities. This is consistent with worldwide trends, which demonstrate that demand for green finance is rapidly increasing as nations and businesses try to transition to a low-carbon economy. The green deposits framework is also consistent with India's commitment to meeting its obligations under the Paris Agreement and the United Nations Sustainable Development Goals (SDGs). RBI has correctly emphasized that all schemes must encourage energy efficiency in resource utilization, reduce carbon emissions and greenhouse gases, promote climate resilience and/or adaptation and value and improve natural ecosystems and biodiversity. The plausible conclusions are with reference to Climate Change, investing in ESG projects. Green deposits assure fixed returns and ensure that the capital contributes to the country's greater socio-economic good, thus putting the invested money to work in more ways than one.

The authors conclude that the green deposits are a novel and successful method of raising funds for a more sustainable future. They provide depositors and borrowers with an opportunity to contribute to India's green transition and create a win-win situation for themselves and the earth. It will surely incentivize banks and financial institutions in India to augment their green financing portfolios by engaging and supporting stakeholders looking to invest in sustainable projects.

Suggestions to Banks

This study on Green deposits at banks in India underlines that Banks should give more emphasis on introducing green deposits which are offered to those industries have taken initiatives for in-house green management. More awareness is required. In addition, Bank should take step regarding the reducing of sacrificing cost and more returns by products such as green deposits.

REFERENCES

[1] Ahmad, F., Zayed, N.M. & Harun, M.A. (2013), Factors behind the adoption of green banking by Bangladeshi commercial banks. *ASA University Review*, 7(2), 241-254.

[2] Andrei Shleifer and Robert W. Vishny (1997), "A survey of corporate governance," *Journal of Finance* 52 (1997): 737.

[3] Ehlers T., and Packer F., (2017)., Green Bond Finance and Certification, *BIS Quarterly review* 2017., PP. 89-101.

[4] Gopi, S. (2016). A Study on the impact of Green Banking in environmental protection. International Journal of Advance Research and Innovative Ideas in Education, 1(4), 382-388.

[5] G20 Green Finance Study Group (2016): Green finance synthesis report 2016, September.

[6] Höhne K., Khosla G., Fekete and Gilbert C.(2012): Mapping of Green Finance Delivered by IDFC Members in 2011, Ecofys. PP 1-4

[7] Hoshen, Md & Hasan, Md & Hossain, Sanuar & Abdullah, Md & Mamun, Al & Mannan, Abdul. (2017). Green Financing: An Emerging Form of Sustainable Development in Bangladesh. 19. 10.9790/487X1912072430.

[8] Jonathan R. Macey (2008), Corporate Governance (Princeton and London: Princeton University Press, 2008)

[9] Judd F. Sneirso (2009) Green Is Good: Sustainability, Profitability, and a New Paradigm for Corporate Governance

[10] Katyal, S., & Nagpal, S. (2014). Role of Green Banking in Sustainable Development of India. International Journal of 360 Management Review, 2(01), 2320-7132.

[11] Krushelnytska, G., (2016)., Introduction to Green Finance ., Global Environmental Facility., PP 1-4. 12. Lindenberg N., (2014). Definition of Green Finance., Proposal for the BMZ. PP 1-3.

Websites

[12] https://www.business-standard.com/amp/about/what-is-green-deposits

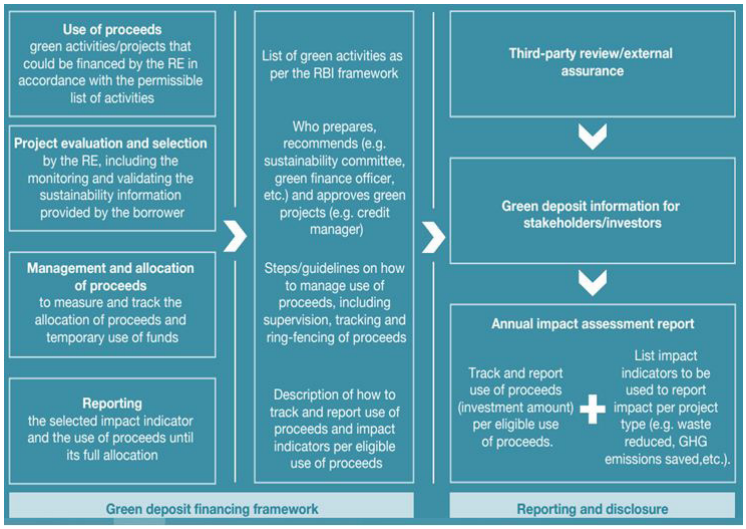
[13] https://www.financialexpress.com/industry/explainer-the-green-deposit-framework/3046363/lite/

[14] https://bfsi.economictimes.indiatimes.com/amp/news/banking/all-you-need-to-know-about-green- deposits/90373334

[15] https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1215#C319

ANNEXURES

Annexure 1: Board Policy for Green Deposits



Source: Authors compilation

Annexure 2: Execution in Regulatory Compliance of Green Deposits

	Green deposit policy	Financing framework (FF)	Impact assessment	Third-party verification	Reporting and disclosure
Regulatory guidance	Board-approved policy on issuance and allocation of green deposits	Board-approved FF for effective allocation of green deposits	To be carried out annually with assistance of external firms to measure and publish impact associated with green lending	To be carried out annually by third party on the allocation of green deposits	Annual review report to be put up to board on the deposits raised and end use of funds
Key offerings	**A comprehensive green deposit policy** which will include but not be limited to: • governance structure • guidance on product offerings, which include denomination, interest rate and tenor of deposits • roles and responsibilities.	**Benchmarking** with international best practices and equivalent green financing standards **Defining the criteria/checklist for selection of green projects** under eligible categories **Defining policy guidelines around** • use of proceeds risk identification, assessment and monitoring defining impact indicators and thresholds.	**Defining impact indicators –** qualitative and quantitative – for each green deposit category **Creating a logical data dictionary** for necessary fields/information to be captured to measure impact indicators Assisting in the aggregation of this information and publishing the **impact assessment report**	Third-party verification report which will include: • initial **planning and review** of policies • **evaluation of design** of key structures, systems and processes for managing and reporting the use of proceeds • **performing substantive testing** selectively, to check that the identified assets adhere to the framework	**Internal reporting and steering** • Development of reporting templates, dashboards and management information system (MIS) • **External reporting and assurance** • **Stakeholder communication**

Source: Authors compilation

Annexure 3: Sample of Green Deposit HDFC

Safeguarding our environment from climate change is the need of the hour. To play our part in combating climate change, HDFC has introduced, Green & Sustainable Deposits, a product that supports United Nations' Sustainable Development Goals (SDGs). Green and Sustainable Deposits will help enhance HDFC's participation in projects directly supporting United Nations' SDGs and empower the depositors to opt for financial products that have a positive impact on the environment, and the society at large.

Special Deposits: Fixed Rates only w.e.f 01/03/2023

Interest on deposits upto Rs 2 Crore Rate of Int%p.a.					
Period	*Monthly*	*Quarterly*	*Half Yearly*	*Annual Income Plan*	*Cumulative Option*
22 months premium	7.15%	7.20%	7.25%	7.40%	7.40%
33 months	7.20%	7.25%	7.30%	7.45%	7.45%
44 months premium	7.15%	7.20%	7.25%	7.40%	7.40%
66 months	7.30%	7.35%	7.40%	7.555	7.55%
Minimum amount (Rs)	40.000	20.000	20.000	20.000	20.000

This can be compared with ordinary deposits:

Regular Deposits (Fixed Rates only)

Period	*Monthly Income Plan*	*Quarterly Option*	*Half-Yearly Option*	*Annual Income Plan*	*Cumulative Option**
Interest rates on deposits upto Rs 2 crore					
24-35 months	7.00%	7.05%	7.10%	7.25%	7.25%
36-60 months	7.05%	7.10%	7.15%	7.30%	7.30%
61-120 months	6.95%	7.00%	7.05%	7.20%	7.20%
Minimum amount (Rs)	40,000	20,000	20,000	20,000	20,000
Interest rates on deposits exceeding Rs 2 crore upto Rs 10 crore					
24-35 months	7.15%	7.20%	7.25%	7.40%	7.40%
36-60 months	7.10%	7.15%	7.20%	7.35%	7.35%
61-120 months	6.95%	7.00%	7.05%	7.20%	7.20%
Interest rates on deposits exceeding Rs 10 crore and below Rs 25 crore					
24-35 months	7.25%	7.30%	7.35%	7.50%	7.50%
36-60 months	7.15%	7.20%	7.25%	7.40%	7.40%
61-120 months	7.00%	7.05%	7.10%	7.25%	7.25%

*For cumulative option, Interest is compounded annually.

Additional

- Senior Citizens (60 Years+) will be eligible for an additional 0.25% p.a. on deposits up to Rs 2 crore.
- Additional ROI of 0.05% p.a. will be applicable on Individual deposits placed/renewed through HDFC Online system and auto-renewed deposits.
- Interest rates for deposit of Rs 25 crore and above would be published on HDFC website.

Green Finance in India: Requirement and Initiatives

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Abstract

Recent years of development has been the result of high exploitation of natural environment. Growing population and urbanization leads to high demand for electricity and energy production. Manufacturing business are becoming more conscious for climate protection. Public construction and infrastructure development becomes big challenges for the govt. and non-govt. institution. With the growing concern of environment protection, business are shifting there focuses on green financing. Green Finance is the growing need of sustainable development of Indian Economy. This paper identifies the Indian economy requirement of Green finance and the govt. initiatives in the field of green finance. Future research directions were also discussed in this paper.

Keywords: *Green Bond, Investment, Green Finance, Sustainable Development, Climate Change. Environment Protection*

INTRODUCTION

Finance is the life line of every business. It is the energy source for the establishment, expansion and survival of industry. Fund as a prime factor uses in business to arrange all other factors of production. The key concern of all business and industry is the long term survival and sustainment. Business aims not only development but sustainable development that is economic benefits with environment friendly growth. Sustainable development required the production, distribution, supply chain management and consumption is based on the concept of environment protection. Green financing is one of the concept to protect environment.Green finance refers to "all forms of investment or lending that consider environmental effect and enhance environmental sustainability" (Volz et al. 2015: 2).



Source: Lindenberg, 2014, Definition of Green Finance – Proposal for the BMZ

Green Financing is the growing need for the sustainable development of economic activates. Green financing is the concept that based on the idea that the investment of fund on the project that maintain ecological balance and reduce negative effect of economic activities on natural environment.

Green Finance indicates investment that aims to protect environment through renewable energy, waste management, climate change mitigation practices, water sanitation and by controlling pollution level.

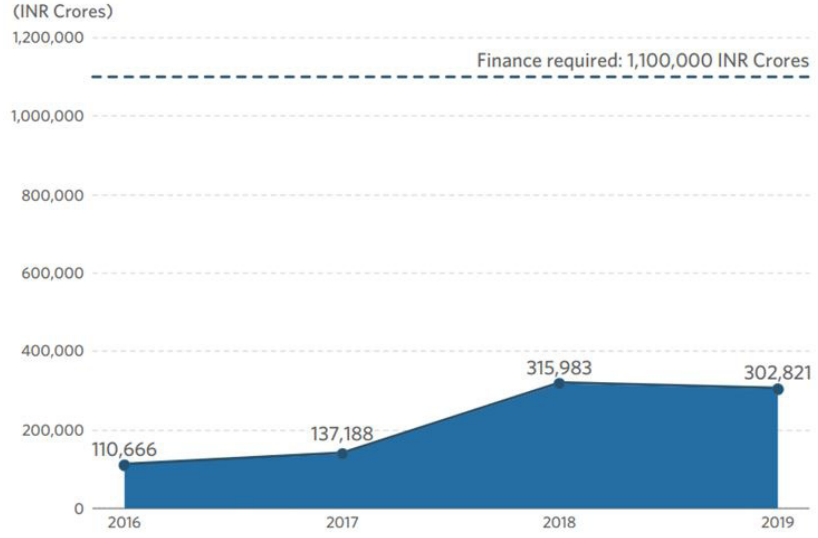
LITERATURE REVIEW

Saleem and Khan(2021) explained that "Green finance is a mechanism that syndicates financing and business with an environmentally friendly attitude of its stakeholders including consumers, manufacturers, investors, and financial financiers". Protection of environment is the central theme of green finance. According to RBI Bulletin January 2021 green finance means "financial arrangements that are specific to the use for projects that are environmentally sustainable or projects that adopt the aspects of climate change".

Green finance aiming to financial investments flowing into sustainable development projects (Höhne/Khosla/Fekete/Gilbert, 2012), Green finance does not means simple investment (Zadek and Flynn, 2013). It refers to the environmentally responsible investments that promotes low-carbon technologies, projects, industries, and businesses (Price water house Coopers Consultants (PWC, 2013).

GREEN FINANCE REQUIREMENT INDIA

The Landscape of Green Finance in India identified that 2015 to 2030, India required roughly INR 11 lakh crores (USD 170 billion) per year in order to achieve India's Nationally Determined

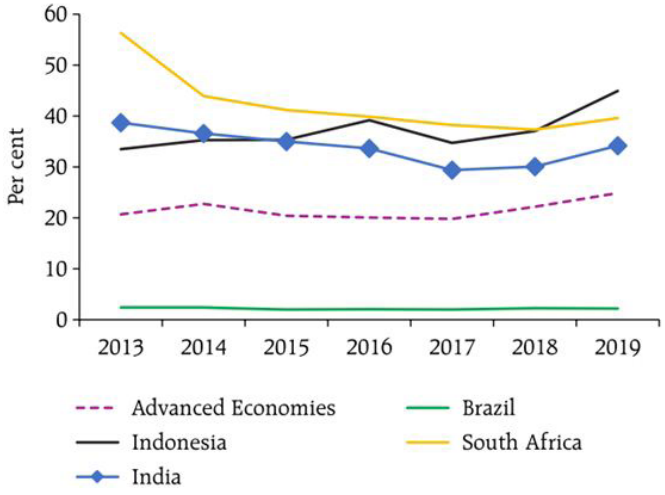


Source: Climate Policy Initiative Report 2019–2020

Contributions (NDCs) under the Paris Agreement. This agreement require reduction of as their NDC, as per the system of carbon trading and accounting.

There has been huge requirement for green finance in the country. As per the data of 2019-2020, green finance in India was INR 309 thousand crores, which covers only 25% of total green finance requirement (Climate Policy Initiative Report 2019-2020).

Green finance could be done many ways, green credit, green bond etc. However the currently India's Green financing depends on debt funding. (Ansari and Anand, 2022). Hu et al. (2023) explained that green finance becomes ineffective for sustainable development in India because of absence of rules in India's climate action plan and a financial gap in the private sector.



Source: Ghosh, S., Nath, S., and Ranjan, A. (2021), Green Finance in India: Progress and Challenges, RBI Bulletin January 2021

Based on the Google Trend Search, the report of RBI Bulletin January 2021 clarifies that Indian Search for Green finance Score of India is comparatively high against advanced economies. That indicates the higher level of interest amongst Indian for Green Finance for sustainable development.

By the 2040 India expected to increase 600 million consumers of electricity. That will be drastically increase the demand of electricity consumption (International Energy Agency, IEA 2015). Indian future energy requirement could be partly filled by renewable energy or solar energy.

However these power projects required high investment. But,there have been many issues for the investment in the field of protecting natural environment and production of renewable energy. Financing Renewable energy remains big challenges in India due to high capital costs, lack of adequate debt financing and short-term maturity of loans (Ansari and Anand, 2022)

Task Force for Creating National Infrastructure Pipeline', India is projected to require infrastructure funding of $4.5 trillion by 2040 mainly for green housing, electric vehicles, and for achieving national renewable energy targets.

GREEN FINANCE CHALLENGES IN INDIA

- **High debt cost** is the prime factor for the low rate of fund raising for green investment in India. The debts market of India is still under the early stage for the green Finance. Energy project and environment projection project's fund requirement cannot be meet due to high cost of debt in Indian Market.
- **Lack of disclosure** on the issuance of Green Bond for the environment friendly project is another issue that leads to challenges for the business to raise further fund for such project. SEBI has required 'a brief description of such project(s) and/or asset(s) disbursed' (SEBI, 2017, p3). Looking at the future viability of such projects. This single description is not sufficient for the smooth functioning of bond market for green finance.
- **Absence of coordination** between the various policies and guidelines is another big challenge for the growth of green finance in India. There has been various circulars, polices and agendas revolving around the environment, sustainability, and renewable energy, but there is absence of coordination between them.

GOVERNMENT INITIATIVE AND FUTURE SCOPE

- **International Solar Alliance (ISA)** on 3oth November 2015 Prime Minister of India and France entry into one big strategic alliance to boost up the production of solar energy. This imitative was based on the theme of climate concern and contribution to the joint Global effort for environment Protection.
- **Generation-based incentive** provided by The Ministry of New and Renewable Energy (MNRE) India focuses on the actual generation of solar and wind energy. It provides INR 2.00 for each unit (kWh) of solar power generation and an incentive of INR 0.50 for each unit (KWh) of wind power generation. This helps to promotes solar power generation and consumption in India.
- In April 2015 Reserve Bank of India has labeled green financing and renewable energy as "Priority Sector". Priority Sector Includes sectors like wind mills, solar power generators, street lighting systems, micro-hydel plants and the like. As per the gridlines bank has to allocation 40% if their net credit to such priority sector. It steps channelized investment in the field of green financing.
- In 2016 Indian Renewable Energy Development Agency (IREDA)' – a Non-Banking Financial Company (NBFC) was converted into Green bank. Green bank means an institution which finances those project that are environment-friendly and based on reduce carbon emissions with the help of banking activities.
- Indian security market has introduced Green Bond for specifically financing the environment friendly project. There has been huge potential of such securities for raising fund amongst Indian capital market. Over $4.96 billion fund has been mobilized though green bond(IndiaCorpLaw, September 2021)

- On February 1st, 2022 India Lunch sovereign green bonds to mobilize resources for green infrastructure.. The aims of such bond are for the investment in those public sector projects that reduce carbon emission and work for the climate protection. Hussain and Dill (2023) explained that "On January 25, 2023, India issued the first tranche of its first sovereign green bond worth INR 80 billion (equivalent to $980 million)."

CONCLUSION

Green Finance is the future of investment. As the natural environment is changing over the years, Sustainability issue has becomes more prominent for the survival of business. Investment in eco-friendly project provides multiple benefits. It has been found through study that Indian current green finance is below to its requirement. On the one hand business requires more of renewable energy source, and another it also need more investment for such environment friendly project. India requires more of public awareness and institutional effort to raise fund for green investment. Govt. could also play active role in this direction by providing clear direction to banking and other financial institution for procedural simplification for investment.

REFERENCES

[1] Volz, U. (2015b). *Effects of Financial System Size and Structure on the Real Economy. What Do We Know and What Do We Not Know?* Geneva: UNEP Inquiry into the Design of a Sustainable Financial System.

[2] Saleem, M. and Khan, M.U. (2021). *International Journal of Advanced Research in Commerce, Management & Social Science* (*IJARCMSS*), 1 ISSN: 2581-7930, Impact Factor: 5.880, Volume 04, No. 04(II), October–December, 2021, pp 01-09.

[3] Megha Chhaochharia (2021). Green Finance in India: Progress and Challenges. *Research Journal of Humanities and Social Sciences* 12(4): 223-6. doi: 10.52711/2321-5828.2021.00039

[4] Ansari, M.K., and Anand, Y., (2022). Green finance in India: Trend and challenges, *Hans Shodh Sudha*, Vol. 2, Issue 4, pp. 43-50, ISSN: 2582-9777.

[5] Höhne / Khosla / Fekete / Gilbert (2012). Mapping of Green Finance Delivered by IDFC Members in 2011, Ecofys.

[6] Zadek and Flynn (2013). South-Originating Green Finance: Exploring the Potential, The Geneva International Finance Dialogues, UNEP FI, SDC, and IISD.

[7] Pricewaterhouse Coopers Consultants (PWC) (2013): Exploring Green Finance Incentives in China, PWC.

[8] Ghosh, S., Nath, S., and Ranjan, A. (2021). Green Finance in India: Progress and Challenges, *RBI Bulletin*, January 2021.

[9] IEA (2015), Energy and Climate Change, IEA, Paris https://www.iea.org/reports/energy-and-climate-change, License: CC BY 4.0

[10] Hu F, Qiu L, Xiang Y, et al. (2023). Spatial network and driving factors of low-carbon patent applications in China from a public health perspective. *Front public Heal* 11: 1121860. https://doi.org/10.3389/fpubh.2023.1121860

A Comprehensive Overview of Financial Instruments for Green Finance: The Present Scenario in India

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Abstract

With increased worldwide action on environmental issues, green finance has received a lot of attention in recent literature. Policymakers and researchers have been focusing on green finance in response to increased worldwide concern about environmental protection, climate change, and sustainable development. Green finance is the term used to describe financial instruments and services that strive to foster environment friendly projects and activities. It comprises investments in green technology, renewable energy, and clean transportation, as well as green bonds, sustainable loans, and other environmentally focused financial instruments. It is critical in combating climate change and achieving a sustainable future. It is an important instrument in India for addressing environmental concerns, promoting sustainable development, and supporting the country's ambitious renewable energy and climate goals. The purpose of this research is to look into the various financial instruments such as green bonds, venture capital funds, and sustainable loans, and various initiatives for sustainable development in India. The research methodology used in this paper includes a systematic review of existing literature, it involves an extensive search of academic journals, reports, articles, books, and online resources to gather relevant information on financial instruments for green finance. The findings of this research contribute to the existing body of knowledge by offering a comprehensive overview of financial instruments for green finance in India. This paper aims to assist policymakers, financial institutions, and investors in making informed decisions and developing effective strategies to promote green finance and sustainable development in India.

Keywords: *Green Finance, Green Investments, Green Economy, Sustainability, Green Bonds, Green Projects, Sustainable Development Goals (SDGs), Green Loans, ESG (Environmental, Social, and Governance) Investing.*

A Comprehensive Review of Green Financial Instruments in India: Corporate Governance in this Realm

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Abstract

With increased worldwide action on environmental issues, green finance has received a lot of attention in recent literature. Policymakers and researchers have been focusing on green finance in response to increased worldwide concern about environmental protection, climate change, and sustainable development. Green finance is the term used to describe financial instruments and services that strive to foster environment-friendly projects and activities. It comprises investments in green technology, renewable energy, and clean transportation, as well as green bonds, sustainable loans, and other environmentally focused financial instruments. It is critical in combating climate change and achieving a sustainable future. It is an important instrument in India for addressing environmental concerns, promoting sustainable development, and supporting the country's ambitious renewable energy and climate goals. The purpose of this research is to look into the various financial instruments such as green bonds, venture capital funds, sustainable loans, and various initiatives for sustainable development in India. The research methodology used in this paper includes a systematic review of existing literature, it involves an extensive search of academic journals, reports, articles, books, and online resources to gather relevant information on financial instruments for green finance. The findings of this research contribute to the existing body of knowledge by offering a comprehensive overview of financial instruments for green finance in India. This paper aims to assist policymakers, financial institutions, and investors in making informed decisions and developing effective strategies to promote green finance and sustainable development in India.

Keywords: *Green Finance, Green Investments, Green Gconomy, Sustainability, Green Bonds, Green Projects, Green Loans, ESG (Environmental, Social, and Governance) Investing.*

INTRODUCTION

Green finance is receiving a lot of attention as climate change efforts on a global level increase. the way for accomplishing a contract between the economy and nature is through green finance. Green finance is the innovative financial pattern adopted by the country to integrate environmental protection with economic development and profit (Charles and

Philip 2020). Green financing is considered as the financial support for green development, which completely reduces emissions of air pollutants and ozone-depleting substances. For the financial advancement of the country, green funds in horticulture, green constructions, green security, and various other environmentally friendly initiatives should rise. One of the important mediums for attaining sustainable development is cleaner production (Vyas 2017). new financial instruments and new policies, such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies, community-based green funds, etc., which are collectively known as "green finance" (Sachs, Thye et al. 2019). The foundation of green credit is green finance. It refers to a series of administrative means requiring that commercial banks and other financial institutions carry on researches and developments to produce pollution treatment facilities and be engaged in ecological protection and restoration(Mohd and Kaushal 2018). It is often hard to distinguish between green finance and climate finance. According to IFC (2017), green finance is defined as "financing of investments that provide environmental benefits", whereas the latter is proposed and defined by UNFCCC as "local, national or transnational financing drawn from public, private and alternative sources of financing that seeks to support mitigation and adaption actions that will address climate change" (Zhang, Zhang et al. 2019).

SIGNIFICANCE OF GREEN FINANCE IN INDIA

In India's goal for sustainable development and tackling environmental issues, green money has become an essential element. If we want to achieve sustainable development goals, we need to open a new file for green projects and scale up the financing of investments that provide environmental benefits **(Sachs, Thye et al. 2019)**. The economic growth of any country depends upon the economic condition that prevails which includes the decline of poverty, and generate employment opportunities which give a direct stead line for economic growth **(Charles and Philip 2020)**. In the financial sector, various services that have adopted green business are banks, stock brokerage companies, credit card companies, and also the companies involved in consumer finance **(Vyas 2017)**. India realizes the need for financial structures that encourage ecologically sound investments because of the rising focus on mitigating climate change. green financing is essential to raise money for renewable energy projects and energy efficiency programs, It makes it possible to apply money towards initiatives that are good for the environment, helping to reduce pollution, save resources, and plan for climate change. Finance is the engine of the development of infrastructure projects, including energy projects **(Sachs, Thye et al. 2019)**. The growth of green finance got an essential push due to the implementation of policy and regulatory frameworks by institutions like the RBI and SEBI. The issuing of green bonds and the growing interest of domestic and foreign investors also emphasize green finance's significance in India's sustainable development journey. The transition to a low-carbon, climate-resilient, and sustainable economy in India is encouraged by green finance, which combines financial and environmental considerations. India has to focus more on green finance and have to contribute more to infrastructure funding to attain the

sustainable development goal **(Charles and Philip 2020)**. For the successful implementation of Green finance, our country has to take several remedial actions to avoid Blockades of green finance and should build strong policy measures **(Charles and Philip 2020)**.

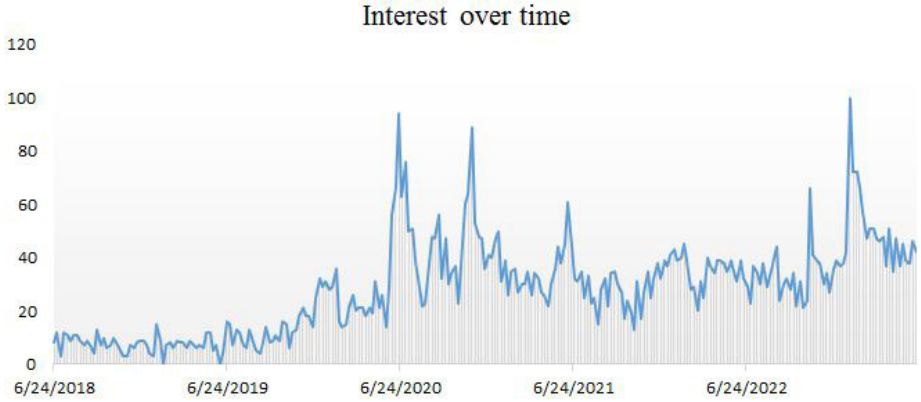


Figure 1

Source: https://trends.google.com/trends/

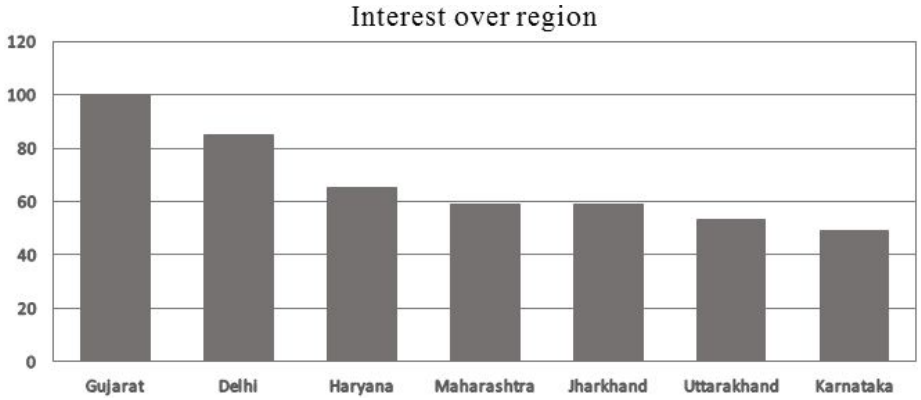


Figure 2

Source: https://trends.google.com/trends/

Figures 1 and 2 were created with the help of the Google Trends website, we have tried to know about the popularity of the term 'Green finance in India'. In which a value of 100 denotes peak popularity and a value of 50 denotes half of the popularity. And found how there was a growth from 2018 to 2023 in popularity within and about the region, found that Gujrat has achieved the value of a hundred in the highest popularity, while Delhi and Haryana are ranked second and third respectively.

LITERATURE REVIEW

B.S. (2013) conducted a study and found that a successful green project in India focuses on enhancing energy efficiency and renewable energy adoption in the MSME sector. The Indian government implements strategies to overcome energy shortages and import dependency,

while the German Federal Ministry for Economic Cooperation and Development provides advisory services, training, and financing to address barriers faced by MSMEs. This support system improves competitiveness and reduces environmental impact, showcasing an integrated approach for scaling up energy efficiency and fostering sustainable development in India's energy sector.

Soundarrajan and Vivek (2016) explain in their study that Green finance is vital for sustainable development and growth. It requires collaboration between finance, technology, government, and consumers. India has opportunities for environmentally responsible finance, and banks need to invest in sustainability and influence broader goals. The Small Industries Development Bank of India (SIDBI) plays a crucial role in promoting the MSME sector. Indian banks must embrace sustainable finance to become global players, focusing on People, Planet, and Profit.

Jha and Bakhshi (2019) in their study given the alarming pollution levels in India, it is crucial to leverage the untapped potential of green finance to support green projects and investments. Blended finance is needed to reduce the cost of capital for private investors. The government should develop a clear green investment strategy with a long-term, economy-wide perspective. Transparent and investor-friendly regulatory policies are necessary to build trust and confidence. India should target both domestic and foreign investors, designing green finance instruments that appeal to both local and international stakeholders.

Bhatnagar, Taneja et al. (2022) attempt a study and found Greening the banking system is crucial for achieving climate objectives and requires significant investments in decarburization. There is growing political and consumer pressure for sustainable finance, and businesses face demands for sustainable practices. India is making adjustments to embrace eco-friendly practices, supported by government laws. Rich nations have a responsibility to assist emerging countries like India. Transitioning to a greener financial system is essential, and India is taking steps while relying on support from wealthier nations.

Kapadia (2022) investigated in his study that financial innovation falls short in addressing ESG concerns as responsible finance disclosures coexist with unsustainable investments. Risks to ESG are inadequately addressed, and misaligned incentives persist. Limited accountability and credibility hinder progress. Greater convergence of corporate social responsibility and governance is needed for sustainable embedding.

Mahal and Phansalkar (2016) found in their study that to make green buildings a standard part of development, we need a clear plan and policies. Different groups, like local governments, financial institutions, and researchers, must work together. Existing rules and codes can help strengthen regional green building policies. However, getting state and central governments to agree may be difficult. We also need to raise awareness among all stakeholders to ensure long-term success and make green buildings a normal part of development.

Wang and Zhi (2016) conducted a study and concluded that Green finance aims to protect the environment and promote sustainable resource utilization. If properly implemented, it can guide fund flows, manage environmental risks, and allocate resources effectively. Regulation and policies play a crucial role in addressing information gaps and preventing moral hazards.

To support environmental protection, an efficient green finance system should be established, coordinating the relationship between ecology and finance. Financial tools can be used to promote renewable energy and achieve environmental goals.

Mohd and Kaushal (2018) exhibited in their study that Green finance is crucial for sustainable development globally. It involves supporting green projects, increasing funding for eco-friendly initiatives, raising awareness, and investing in renewable energy. By reducing greenhouse gas emissions, green financing helps create a greener future.

Abdulkhalikov, Dubrova et al. (2021) discovered in their study that to develop the "green economy" in Russia, support for non-profit organizations is crucial. Financial backing from the government and private investments is necessary for effective and efficient innovation projects. The "green economy" has greater financial resources and instruments compared to traditional economies. Establishing a green investment bank, similar to the one in Great Britain, would help allocate significant funds towards solving pressing environmental challenges.

Akomea-Frimpong, Adeabah et al. (2021) conducted a meta-analysis study and explored green finance in the banking industry, identifying key products and determinants. It highlights research and policy gaps, emphasizing the need for more studies in underrepresented regions. The findings have implications for banks' competitiveness, sustainability, and financial performance while aiding policymakers in formulating stakeholder-centric policies.

Long, Lucey et al. (2022) provided an overview of climate financing research, highlighting its growth and major themes. The analysis shows increased interest after the Paris climate agreement, with contributions from around the world. Major themes include climate change, green financing, public policy, and green bonds. The study suggests future research directions based on these findings.

Cerqueti, Deffains-Crapsky et al. (2023) conducted a study and examined the role of mini-bonds in green finance and their relationship with company performance. The study analyzes companies that issued mini-bonds in 2016 and evaluate their performance over the subsequent three years. The findings suggest that mini-bonds have the potential to facilitate green transactions and align with existing literature. However, further research is needed to explore the impact of green mini-bonds on performance and their specific connection to environmental and social issues.

OBJECTIVES OF THE STUDY

- To review the existing literature on the concept of Green Finance & its instruments in India.
- To comprehend how corporate governance is high on green finance.
- To understand the difficulties and future direction of green finance in India.

RESEARCH METHODOLOGY

For the study, a total of 62 research papers were scanned from Scopus, springer, ABDC, and other databases. Out of which we have kept 36 research papers in the inclusion category

and the rest we have kept in the exclusive category. The period for these research articles is from the year 2013 to 2023. A systematic literature review technique has been used to do its research work, the framework of the research is as follows:

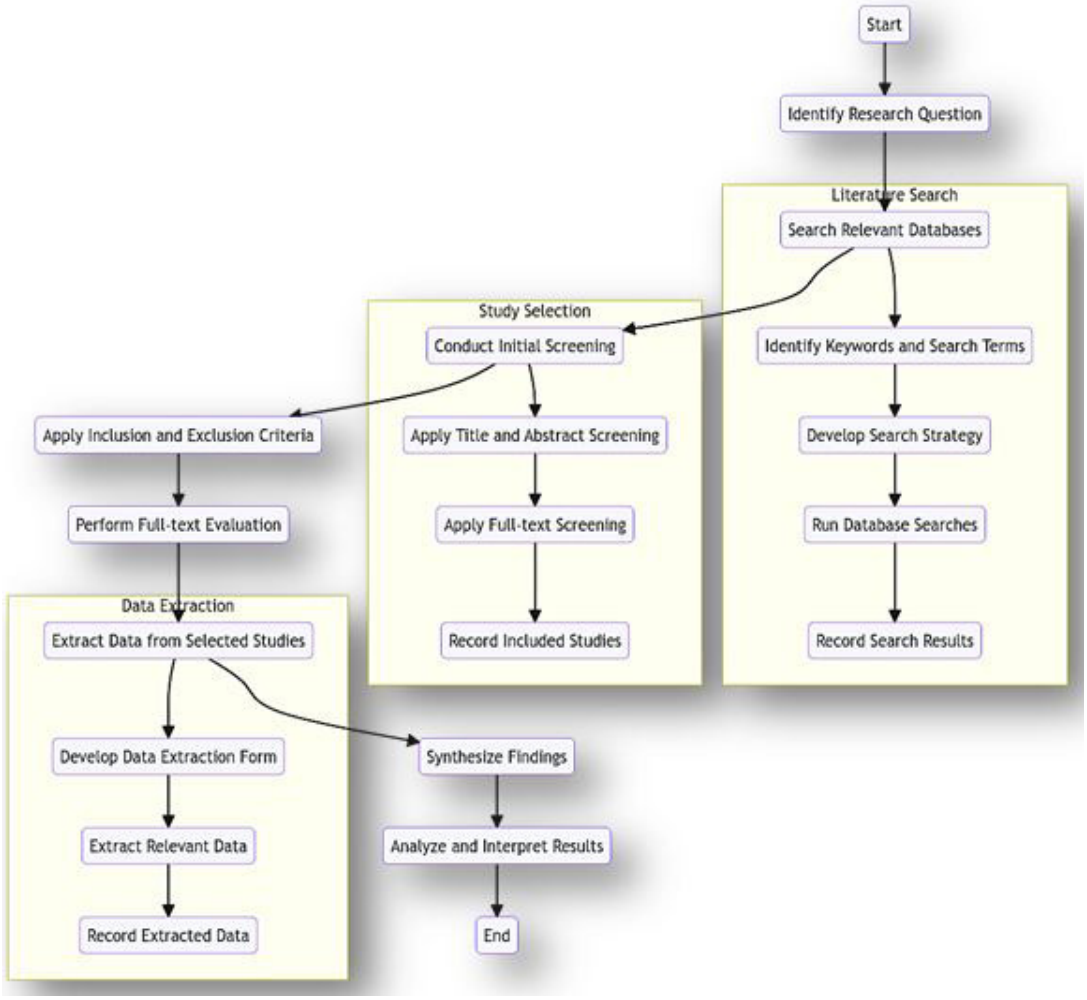


Figure 3: The Framework of the Study

FINANCIAL INSTRUMENTS FOR GREEN FINANCE

Green financial instruments are tools of specific mechanisms that facilitate investment and funding for environmentally sustainable projects. These tools have been developed to raise money for projects that support environmentally friendly technologies, sustainable agriculture, renewable energy, energy efficiency, and other programs that benefit the environment. In Figure 4 given B, C, D, E, F, G, H, I are denoted as green bonds, green loans, green funds, carbon markets, renewable energy certificates, green insurance, green venture capital, and sustainability-linked loans respectively. The details of these instruments are as follows:

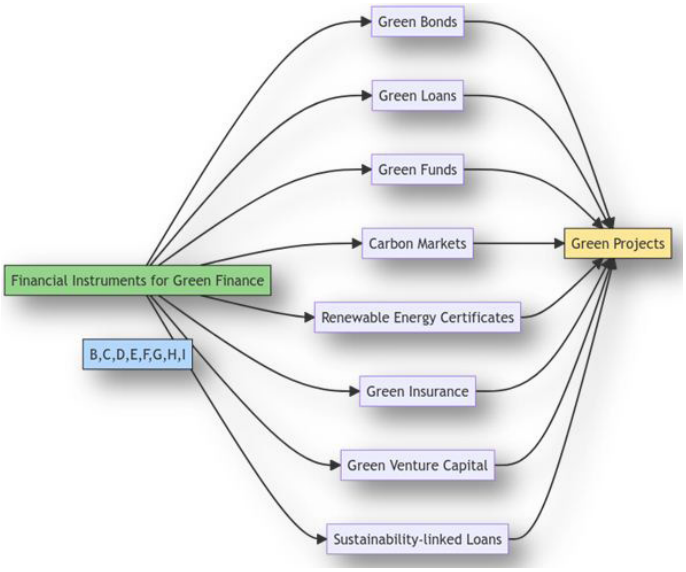


Figure 4

1. **Green Bonds:** These instruments are issued by governments, corporations, and municipalities to raise funds specifically for green projects. Investments in renewable energy, energy efficiency, climate adaptation, and other environmentally friendly initiatives are planned with the profits from green bond issuances.
2. **Green Loans:** These types of loans are financial instruments offered by banks and other financial institutions to finance environmental benefits projects. Projects that fulfill predetermined green requirements are given advantageous conditions, such as reduced interest rates or longer repayment periods, with these loans.
3. **Green Funds:** These funds are investment vehicles that pool investor money to finance environmentally friendly projects. These funds may be managed by asset management firms or institutional investors., which focus on investing in businesses or projects with good environmental performance or sustainable business strategies.
4. **Carbon Markets:** A mechanism for purchasing and selling carbon credits is provided through carbon markets, such as carbon trading or cap-and-trade systems. These tools support the creation of a market value for carbon emissions, which motivates companies to adopt green practices and technologies.
5. **Renewable Energy Certificates (RECs):** The environmental characteristics of the production of renewable energy are represented by RECs, which are tradable certifications. Because these certificates are independent of the actual electricity and can be bought and sold, both businesses and consumers can support renewable energy projects and get the environmental benefits associated with them.
6. **Green Insurance:** Products for green insurance deal with environmental risks and responsibilities. These products may include insurance against natural disasters, policies for energy efficiency improvements, and policies for climate-related risks.

7. **Green Venture Capital:** Green venture capital firms make investments in startup and early-stage businesses that contribute to producing innovative and sustainable technology, goods, and services. These investments offer financial support and expertise to help grow up green businesses.
8. **Sustainability-linked Loans:** Sustainability-linked loans are financial products where the interest rate or other conditions are determined by the borrower's sustainability goals or environmental performance. Borrowers could be eligible for reduced interest rates or other financial incentives if they satisfy certain sustainability goals.

These financial tools are intended to promote responsible financial behavior, accelerate the transition to a greener economy, and link investment flows with sustainability objectives. It's vital to remember that different countries and regions may have different availability and unique features for these instruments.

Table 1: Overview of Financial Instruments for Green Finance in India

Financial Instrument	*Description*	*Purpose*	*Examples*
Green Bonds	Fixed-income instruments are issued to finance environmentally-friendly projects.	Fund renewable energy projects, energy efficiency, waste management, etc.	Indian Railway Finance Corporation Green Bonds, Yes Bank Green Infrastructure Bonds
Green Loans	Loans are provided to fund green projects or initiatives.	Support renewable energy projects, green buildings, sustainable agriculture, etc.	State Bank of India Green Car Loan, HDFC Green Energy Loans
Green Funds	Investment funds that focus on financing green projects and companies.	Channel investments toward renewable energy, clean technology, sustainable infrastructure, etc.	SBI Green Fund, Axis ESG Equity Fund
Carbon Credits	Tradable certificates representing a reduction or removal of greenhouse gas emissions.	Encourage emission reduction projects and sustainable practices.	Tata Motors Carbon Credits, Hindustan Zinc Carbon Credits
Energy Efficiency Financing	Loans or grants specifically targeted at improving energy efficiency in various sectors.	Promote energy-efficient practices, equipment upgrades, and retrofits.	Energy Efficiency Services Limited (EESL) Loans, Bureau of Energy Efficiency Grants
Renewable Energy Certificates (RECs)	Tradable certificates that represent the generation of renewable energy.	Encourage renewable energy generation and provide revenue for renewable energy producers.	Indian Energy Exchange RECs, Power Exchange India Limited RECs

Financial Instrument	*Description*	*Purpose*	*Examples*
Green Insurance	Insurance products that cover environmental risks or promote sustainability.	Mitigate risks associated with climate change, natural disasters, and environmentally sensitive projects.	Agriculture Insurance Company Green Insurance, ICICI Lombard Renewable Energy Insurance
Green Microfinance	Financial services tailored for micro-enterprises engaged in green activities.	Support small-scale renewable energy projects, organic farming, and sustainable livelihoods.	Ujjivan Small Finance Bank Green Loans, Suryoday Small Finance Bank Green Microfinance
Green Leasing	Leasing arrangements for green assets such as energy-efficient equipment or electric vehicles.	Promote the adoption of eco-friendly technologies and reduce upfront costs.	Hero Electric Green Leasing, Mahindra Electric Vehicle Leasing

REGULATORY FRAMEWORKS AND GUIDELINES FOR GREEN FINANCE

To shape economic development sustainably, India needs to come up with green finance strategies and products **(Charles and Philip 2020)**. And to solve environmental issues and promote sustainable development, there has been an increasing focus on encouraging green financing in India. Excess green regulation can discourage green innovation and ultimately reduce the size of pro-green activities. **(Ozili 2022)** The regulatory frameworks and policies established by the Indian government are intended to foster an environment that is supportive of green finance activities. The Reserve Bank of India (RBI) is one of the major regulatory agencies in charge of regulating green finance in India. Banks and other financial institutions have been provided with regulations and guidelines by the RBI on how to incorporate environmental and social issues into their lending practices. The Sustainable Development Department of the RBI holds responsibility for promoting green financing through some initiatives, including the Green Bonds Market Development Programme and the Sustainable Financing Scheme. These initiatives are designed to raise money for green projects and give financial institutions incentives to support green initiatives. The Securities and Exchange Board of India (SEBI) is a key regulatory body for green finance in India. Green bonds are debt securities issued particularly to finance ecologically sustainable projects, and SEBI has established criteria for their use. The guidelines provide issuers with a framework for disclosing details about the use of funds, project appraisal, and continuous oversight of green bonds. These rules ensure responsibility and transparency in the issue of green bonds, fostering investor confidence and supporting the expansion of the green bond market in India. In addition, the Ministry of New and Renewable Energy (MNRE) is essential to India's efforts towards promoting green finance. MNRE provides a range of financial subsidies and incentives to help finance renewable energy projects. These incentives include accelerated

depreciation, tax advantages, and soft loans. To develop specialized loan products and funds for renewable energy projects, the ministry also works with financial institutions. MNRE promotes investment in clean energy and eases the transition to a greener economy by offering financial help and advocating for favorable laws. Additionally, businesses are required by the Securities and Exchange Board of India (SEBI) to declare their environmental, social, and governance (ESG) performance. Green corporations and entrepreneurs may receive rewards for complying with green regulations and may receive penalties for non-compliance with green regulations. (Ozili 2022) This action aims to increase transparency and provide investors with the information needed to make decisions appropriately based on a company's sustainability performance.

HOW CORPORATE GOVERNANCE IS HIGH ON GREEN FINANCE

Corporate governance is vital in the realm of green finance because it ensures sure that businesses prioritize and incorporate environmental factors into their decision-making processes. In Figure 5 bidirectional arrows connecting "Corporate Governance" and "Green Finance" and showing their interdependence and reciprocal influence. Green finance promotes and supports corporate governance, while corporate governance drives and impacts it. Aspects like sustainability integration, transparency and reporting, risk management, stakeholder relations, investor expectations, and regulatory focus are further connected to corporate governance. Corporate governance has a wide range of effects on green finance, including

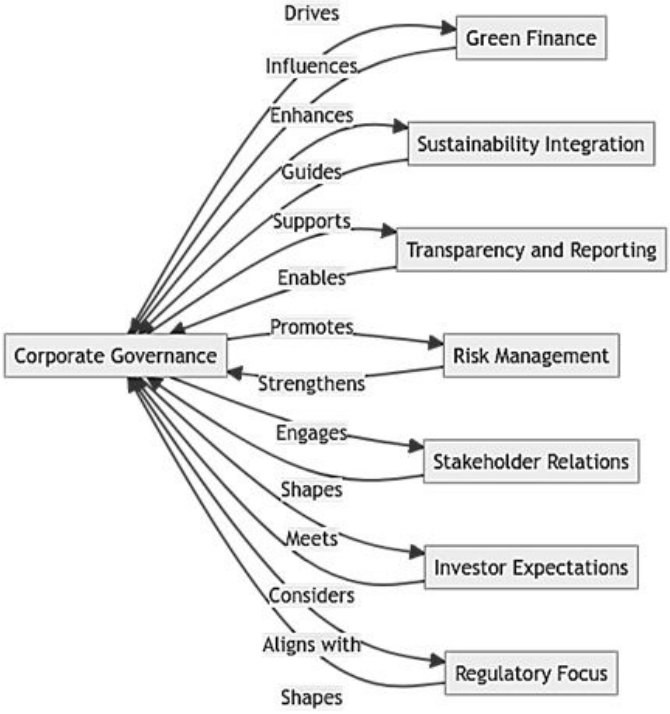


Figure 5

influencing, guiding, enabling, strengthening, shaping, and aligning these components. With the following points, we can understand how corporate governance is highly relevant in the context of green finance.

1. **Board Supervision:** Corporate governance frameworks place a strong emphasis on the board of directors' oversight and guidance of a company's strategic direction, risk management, and accountability. Boards are essential in establishing environmental goals, tracking progress, and ensuring that the company's financial actions are in line with sustainability goals in the context of green finance. They are in charge of incorporating sustainability into the company's overall strategy and giving advice on activities related to green financing.
2. **Environmental and Social Risk Management:** Effective corporate governance frameworks put a strong emphasis on the identification and control of environmental and social hazards. Companies are required by green finance instruments to assess and mitigate environmental hazards related to funded projects. Corporate governance frameworks make ensure that risk management processes consider environmental factors into account. Examples of these considerations include carrying out environmental impact assessments, mitigation strategies, and tracking and reporting on environmental performance.
3. **Transparency and Disclosure:** Transparency and disclosure are vital in green finance. Corporate governance frameworks promote it. Companies must disclose information that is truthful and comprehensible regarding their environmental effect, sustainability practices, and achievement of sustainability goals. This includes informing stakeholders about sustainability activities, reporting on environmental performance, and using green finance instruments. Investors and stakeholders may make informed decisions.
4. **Stakeholder Engagement:** Green finance initiatives require companies to engage with stakeholders, including investors, customers, communities, and NGOs. Corporate governance frameworks emphasize the importance of effective stakeholder engagement to understand their expectations, concerns, and perspectives related to environmental sustainability. By engaging with stakeholders, companies can better align their green finance initiatives with stakeholder needs, build trust, and foster long-term relationships.
5. **Long-Term Value Creation:** Good corporate governance practices promote companies to take long-term value creation through environmental sustainability initiatives. Green financial instruments support investments in sustainable projects that have the potential to generate long-term returns. It helps companies to balance short-term performance with long-term sustainability considerations, prioritizing activities that add value not only to shareholders but also to the environment and society.
6. **Ethical and Responsible Behavior:** Corporate governance encourages moral conduct and ethical corporate practices. Companies are required to behave ethically and with high standards of integrity when it comes to green finance. Corporate governance frameworks give firms guidelines and mechanisms for establishing and upholding moral standards,

encouraging ethical decision-making, and avoiding "greenwashing" or false claims about the sustainability of the environment.

Companies can incorporate sustainability into their organizational DNA, link their financial activities with environmental aims, and ensure efficient management of environmental risks by incorporating environmental considerations into their corporate governance practices. Strong corporate governance frameworks support long-term value generation, promote a culture of environmental responsibility, and raise the trustworthiness and reliability of businesses that engage in green finance.

BENEFITS OF CORPORATE ENGAGEMENT IN GREEN PRACTICES

Green financial instruments encourage corporate engagement with ecologically responsible practices, which has several advantages for both businesses and society at large. First, by enabling businesses to invest in initiatives that reduce environmental risks and promote cleaner technology, it improves environmental sustainability. As a result, carbon footprints are reduced, natural resources are preserved, and a more sustainable future is supported. Second, it gives businesses a competitive edge by winning over environmentally conscientious customers, enhancing brand reputation, and setting them apart from competitors. Thirdly, using green financing instruments gives businesses access to funds specifically designated for eco-friendly projects, increasing their funding possibilities and attracting investors with an eye toward sustainability. Fourthly, it ensures long-term business resilience and cost savings by reducing environmental risks and the responsibilities that go along with them. Additionally, by exceeding stakeholder expectations for environmental responsibility and generating loyalty and trust, corporate engagement in green practices promotes stakeholder relations. Additionally, it encourages creativity, efficacy, and operational enhancements as businesses look into sustainable solutions and adjust to new trends. Last but not least, it helps businesses maintain compliance with changing environmental requirements, avoiding fines and reputational harm. In conclusion, corporate involvement in ecologically sound business practices through the use of green financing instruments offers several benefits that promote business success while promoting a more resilient and sustainable future.

CHALLENGES AND FUTURE DIRECTIONS

Challenges and future directions of financial instruments for green finance in India can be summarized as follows:

Challenges

1. **Lack of Awareness and Education:** The lack of knowledge and understanding of green finance among many stakeholders, such as investors, borrowers, and financial institutions, is an important problem. The idea of green finance, its potential advantages, or the alternatives for investing in sustainable initiatives may not be well known to many people or enterprises

2. **Insufficient Policy and Regulatory Framework:** A major hurdle to the implementation of green finance is the lack of a complete and strong policy and regulatory framework. To promote investments in green initiatives, clear rules, standards, and incentives are required. Even though India has made some efforts, such as the adoption of Green Bonds and the Sustainable Finance Framework, these policies still require improvement
3. **Limited Access to Finance:** Medium-sized enterprises (SMEs), which make up a sizeable percentage of the Indian economy, frequently face difficulties when trying to obtain financing for green initiatives. Their ability to access loans or investments for sustainable initiatives may be hampered by a lack of collateral, high processing fees, and a lack of financial awareness
4. **Risk Perception and Evaluation:** Financial institutions could view green ventures as risky, particularly in developing industries like renewable energy. Due to technology uncertainty, market risk, and lengthy payback times, it can be difficult to identify and evaluate the risk involved in these initiatives. This risk perception might lead to lower funding options or higher interest rates, which makes green finance less alluring for both borrowers and lenders.
5. **Inadequate Project Pipeline:** A major obstacle is the dearth of a well-developed pipeline of bankable green projects. Financial institutions find it challenging to invest capital in the green finance sector due to the lack of viable and investable initiatives. Collaboration between the government, financial institutions, project developers, and other stakeholders is necessary to create a strong project pipeline.
6. **Data Availability and Standardization:** For evaluating the viability and impact of green projects, it is essential to have access to and trust in data on environmental performance, sustainability measures, and impact measurements. A lack of standardized data collecting, reporting, and disclosure practices, however, makes it difficult to make informed choices and assess green investment opportunities.
7. **Capacity Building and Skill Gap:** The successful implementation of green financing must increase capacity and acquire specialized knowledge. To better understand and assess green investments, financial professionals, regulators, and policymakers must increase their knowledge and expertise.
8. **Cost Competitiveness:** Some green initiatives and technology could nevertheless cost more than their conventional alternatives. For instance, although it is improving, the cost competitiveness of renewable energy projects remains a barrier to their widespread adoption. The successful application of green finance depends on ensuring cost competitiveness through innovation, technological developments, and supportive regulations.

A multifaceted strategy combining cooperation between the government, financial institutions, enterprises, civil society organizations, and international partners is needed to address these obstacles and difficulties. Encouraging investment in green initiatives requires raising awareness, enhancing policy frameworks, building capacity, enhancing data accessibility, and encouraging creative finance mechanisms.

Future Directions

1. **Strengthening Policy and Regulatory Support:** ongoing efforts are required To make the policy and regulatory frameworks for green finance stronger. This entails establishing specific goals, creating uniformity in reporting and disclosure regulations, and encouraging incentives for the use of green financial instruments.
2. **Enhancing Awareness and Capacity Building:** It is crucial to spread information and understanding about green financing. The advantages, risks, and possibilities related to green financial instruments must be made known to stakeholders. Green finance practices can be understood and used by financial institutions, investors, and enterprises with the help of capacity-building programs.
3. **Developing Innovative Financial Instruments:** The creation of innovative financial instruments is required to meet the unique requirements of various industries and project sizes. This entails developing accessible, inexpensive, and financial solutions that are in line with the distinctive features of green projects, such as green bonds, green loans, and other financial products.
4. **Collaboration and Partnerships:** The development of green finance depends on cooperation between financial institutions, companies, governments, and civil society organizations. Public-private collaborations can make it easier to gather the resources and skills needed to scale up green initiatives.
5. **Integration of Environmental, Social, and Governance (ESG) Factors:** Green finance can become more widely accepted by incorporating ESG elements into investment decision-making processes. Implementation of green financial instruments can be accelerated by promoting ethical investing practices and integrating sustainability factors into risk evaluations.

CONCLUSION AND FURTHER RESEARCH SCOPE

The findings from the research highlight sustainable development in India, along with the possibilities of green finances. After reviewing a lot of literature, the conceptual knowledge of green finance has been known green finance is an innovative finance method that is used in environmentally friendly projects. It is considered funding for environment-friendly projects. The status of green finance in India was ascertained as well as information was obtained about those financial instruments which are specifically based on green projects Highlighted Environment-friendly projects are supported by a range of financial instruments, including carbon markets, green bonds, loans, and funds. And on the other hand, found the importance of corporate governance in the realm of this green finance. Corporate governance is essential for encouraging environmentally friendly practices and ensuring ethical decision-making. Improved environmental sustainability, competitive advantage, financial access, stakeholder connections, and operational enhancements are just a few benefits associated with taking part in green initiatives. However, issues including inadequate awareness, insufficient project pipelines, and policy gaps must be addressed. Although research is being done in this area,

these researches are very few. More research is needed in this area, As a further research scope we can do a comparative study with India and other countries also.

REFERENCES

[1] Abdulkhalikov, R.Z. et al. (2021). "Financial instruments of "green" economy development in Russia." *E3S Web of Conferences* 262: 04002.

[2] Akomea-Frimpong, I. et al. (2021). "A review of studies on green finance of banks, research gaps and future directions." *Journal of Sustainable Finance & Investment* 12(4): 1241-1264.

[3] B.S, K. (2013). "A Study on Emerging Green Finance in India: Its Challeges and opportunities." *International Journal of Management and Social Sciences Research* 2(2): 49-53.

[4] Bhatnagar, M., et al. (2022). "A wave of green start-ups in India—The study of green finance as a support system for sustainable entrepreneurship." *Green Finance* 4(2): 253-273.

[5] Cerqueti, R., et al. (2023). "Green finance instruments: Exploring minibonds issuance in Italy." *Corporate Social Responsibility and Environmental Management*.

[6] Charles, G. and B. Philip (2020). "Green finance: recent drifts, confrontation and prospect opportunities for sustainable development in india." *Mukt Shabd Journal*.

[7] Jha, B. and P. Bakhshi (2019). "Green Finance: Fostering Sustainable Development in India." *International Journal of Recent Technology and Engineering* (*IJRTE*) 8(4): 3798-3801.

[8] Kapadia, S.B. (2022). "ESG Investing and Innovative Instruments for SDG Financing: A Reference to India." *Energy and Infrastructure Management in Post Covid-19 Era*: 19-25.

[9] Long, S., et al. (2022). "Climate finance: What we know and what we should know?" *SSRN Electronic Journal*.

[10] Mahal, A.N. and A.A. Phansalkar (2016). "Accelerating green building growth with old & new policy instruments." *Int. Journal of Engineering Research and Application* 6(8): 59-63.

[11] Mohd, S. and V. K. Kaushal (2018). "Green Finance: A Step towards Sustainable Development." *MUDRA: Journal of Finance and Accounting* 5(01).

[12] Ozili, P. K. (2022). "Green finance research around the world: A review of literature." *International Journal of Green Economics*: 1–31.

[13] Sachs, J., Thye, W.W., Yoshino, N., Taghizadeh-Hesary, & Farhad. (2019). Why is green finance important. *Asian Development Bank Institute* (917), 1-9.

[14] Soundarrajan, P. and N. Vivek (2016). "Green finance for sustainable green economic growth in India." *Agricultural Economics* (*Zemědělská ekonomika*) 62(1): 35-44.

[15] Vyas, M. (2017). "Green Finance and Sustainable Development: An Indian Perspective." *International Journal of Multifaceted and Multilingual Studies* 4(5).

[16] Wang, Y. and Q. Zhi (2016). "The Role of Green Finance in Environmental Protection: Two Aspects of Market Mechanism and Policies." *Energy Procedia* 104: 311-316.

[17] Zhang, D., et al. (2019). "A bibliometric analysis on green finance: Current status, development, and future directions." *Finance Research Letters* 29: 425-430.

Awareness Among Youth Regarding Green Economy in India

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Abstract

This study aims to assess the awareness among youth about the concept of a green economy in India. The green economy represents a sustainable and inclusive economic system that aims to address environmental challenges while promoting social equity and economic development. It is very important to understand the level of awareness among the youth regarding green economy because youth play a significant role in shaping the future and driving sustainable practices.

In accordance with the research methodology, a representative sample of 100 respondents were collected through a survey questionnaire. The questionnaire measured their awareness of the green economy, their engagement in sustainable and environmental practices. In addition, the research looked how the awareness of youth can be improved. SPSS was used to analyze quantitative data. The chi-square test and t-test were used to test the hypothesis. For further analysis, pie charts, graphs and tables were used.

Keywords: *Green Economy, Awareness, Sustainable Practices, Environment.*

INTRODUCTION

In recent years, the idea of a "green economy" has been quietly popular as a strategy for addressing urgent environmental issues and advancing sustainable growth and economic development. The shift to a green economy is crucial in the context of India, where rapid industrialization and population increase have put enormous strain on natural resources and ecosystems. The knowledge and participation of the youth in this transformative process is essential since they are the guardians of the future.

Youth in India make up a sizeable demographic group and are known for their vigour, idealism, and capacity to effect change. Their comprehension of the green economy concept and awareness of it play a critical role in influencing their attitudes, behaviors, and decision-making in favour of sustainability. The youth can function as catalysts for sustainable practices, innovation, and policy advocacy by being given the appropriate information and encouraged to have an awareness of the environment.

This study aims to assess the level of awareness among youth about the green economy in India. It seeks to understand their knowledge and understanding of the concept, their

perceptions of its benefits, and their engagement in environmentally friendly practices. By examining these dimensions, the research aims to shed light on the current state of awareness among the youth and identify potential avenues for enhancing their understanding and involvement in sustainable development. Furthermore, the study explores the sources of information that contribute to the awareness of the green economy among youth. It investigates the role of educational institutions, media platforms, social networks, and other channels in shaping their awareness and knowledge. Understanding the influence of these information sources is vital for designing effective strategies to disseminate information, promote awareness, and foster a sense of responsibility towards environmental stewardship among the youth.

LITERATURE REVIEW

The phrase "Green Economy" was originally used in groundbreaking 1989 report for the Government of the United Kingdom by a group of top environmental economist, titled "Blueprint for a Green Economy" (Pearce, Markandya and Barbier, 1989). However, it was not until the economic crises of late 2000s that green economy gained international attention as a method of economic recovery centered on addressing climate change and creating green jobs. A green economy is defined by UNEP as one that considerably reduces environmental dangers and ecological scarcities while improving human well-being and social fairness (UNEP 2011). A low-carbon, resource-efficient, and socially inclusive economy is what it is simply referred to as. According to the Organization for Economic Cooperation and Development (OECD), "a green economy is one that leads to increased human well-being and social equity while significantly reducing environmental risks and ecological scarcity." According to the OECD Green Growth Strategy, "public and private investments lessen carbon emissions and pollution, enhance energy and resource efficiency, and stop the loss of biodiversity and ecosystem services." According to the World Resources Institute, "a green economy is one that significantly reduces environmental risks and ecological scarcity while improving human well-being and social equity." In a green economy, governmental and private investments fuel revenue and employment growth. These definitions provide a broad understanding of the green economy, emphasizing the integration of environmental considerations into economic decision-making processes and the pursuit of sustainable development goals.

Youth engagement in the green economy can be increased through various means. According to Maria (2022), the younger generation can exert influence through co-creating values, which can support the adoption of ethical behavior among green consumers. Young people have varying attitudes towards the green economy. D'Amato (2017) found that young researchers have disparate perceptions of the Green Economy, with different degrees and nature of desired societal change and the role of research in delivering such change. Al-Balushi (2022) found that most higher education students in Oman are aware of the concept of the green economy, but there are still some misconceptions and a lack

of knowledge about some themes. Yacub (2021) found that sustainability orientation and education have a positive and significant effect on green entrepreneurship among young generations, while risk perception is not significant. According to Kanchanapibul (2014), ecological affect and knowledge have a big role in influencing young consumers' interest in going green and subsequent purchases. Overall, the papers suggest that young people have varying levels of awareness and engagement with the green economy, and that education and awareness programs may be important in promoting green attitudes and behaviors among young people. Tuncer (2005) found that effective environmental education can equip young people to contribute more in the area of environmental concerns and sustainable development.

OBJECTIVES OF THE STUDY

1. To assess the level of awareness among youth regarding the concept of the green economy in India.
2. To examine the engagement of youth in sustainable and environmental-friendly practices.

RESEARCH HYPOTHESIS

- **Hypothesis 1**
  H0: There is no significant relation between gender and youth familiarity with concept of green economy.
- **Hypothesis 2**
  H0: There is no significant relation locality (rural, urban) and youth familiarity with concept of green economy.
- **Hypothesis 3**
  H0: There is no significant difference between the mean of gender and engagement of youth in sustainable practices.

RESEARCH METHODOLOGY

For the research Primary data was collected from a sample of 100 respondents. For the data collection, a questionnaire was designed which includes the questions related to awareness and their engagement in sustainable practices. The questionnaire was filled by 100 respondents. The respondents were selected based on a convenience non-probability sampling process.

SPSS software was used for analysis the quantitative data. For the data analysis Chi-square test and t-test were used. For better understanding of some questions pie charts, graphs and tables were used.

ANALYSIS AND INTERPRETATION

Table 1: Demographic profile of Respondents

Parameter	*Sub-parameter*	*Frequencies*	*Percentage*
Gender	Male	49	49
	Female	51	51
	Total	100	100
Age	18-25	61	61
	26-30	27	27
	31-35	10	10
	35 and above	2	2
	Total	100	100
Occupation	Student	61	61
	Employed	23	23
	Self Employed	6	6
	Unemployed	6	6
	Others	4	4
	Total		
Educational Qualification	Senior Secondary	10	10
	Bachelor's degree	37	37
	Master's degree	48	48
	Doctoral	5	5
	Others	0	0
	Total	100	100
Stream	Science	31	31
	Commerce	42	42
	Arts	21	21
	Others	6	6
	Total	100	100
Locality	Rural	47	47
	Urban	53	53
	Total	100	100

The above table shows that the distribution of gender is relatively balanced with 51% female and 49% male participants. The participation of age group between 18-25 is high ie.61% as compared to other age groups. Majority of the participants are the students. The participation of Commerce stream students are high with 42%.The majority of the participants are mainly belong to urban are with 53%.

- **Problem 1:** To identify the association between gender and youth familiarity with the concept of Green Economy.
- **H0:** There is no significant association between gender and youth familiarity with the concept of Green Economy.

Table 2: Gender * Have You Heard the Concept of the Green Economy Before?

			Have You Heard the Concept of the Green Economy Before?		*Total*
			Yes	*No*	
Gender	Male	Count	37	12	49
		Expected Count	40.7	8.3	49.0
	Female	Count	46	5	51
		Expected Count	42.3	8.7	51.0
	Total	Count	83	17	100
		Expected Count	83.0	17.0	100.0

Chi-Square Test

	Pearson Chi-Square	*Likelihood Ratio*	*Linear-by-Linear Association*	*No. of Valid Cases*
Value	3.820			100
Df	1	1	1	
Asymp. Sig. (2-sided)	.051	.048	.052	

Interpretaion

Chi-square test was used to examine the association between gender and youth familiarity with the concept of Green Economy. The computed value of $\chi^2 = 3.820$, df = 1, p value = 0.051. This suggest that there is marginal level of significance, indicating that there might be relation between gender and youth familiarity with the concept of Green Economy.

- **Problem 2:** To identify the association between locality (rural, urban) and youth familiarity with the concept of Green Economy.
- **H0:** There is no significant relation between locality (rural, urban) and youth familiarity with the concept of Green Economy.

Table 3: Locality * Have You Come Across the Concept of the Green Economy Before?

			Have you come across the concept of the Green Economy before?		*Total*
			Yes	*No*	
Locality	Rural	Count	39	8	47
		Expected Count	39.0	8.0	47.0
	Urban	Count	44	9	53
		Expected Count	44.0	9.0	53.0
	Total	Count	83	17	100
		Expected Count	83.0	17.0	100.0

Chi-Square Test

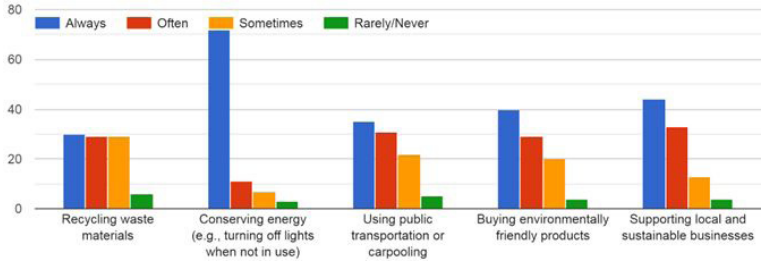
	Pearson Chi-Square	*Likelihood Ratio*	*Linear-by-Linear Association*	*No. of Valid Cases*
Value	0.000028	0.000028	0.000028	100
Df	1	1	1	
Asymp.Sig.(2sided)	.996	.996	.996	

Interpretation

The computed value of chi-square $\chi^2 = 0.000028$, df = 1, p-value = .996). This indicate that there is no significant relation between locality (rural, urban) and youth familiarity with the concept of Green Economy. The p-value is high, which suggest that any observed association likely due to chance.

Question – Engagement in Sustainable Practices

How Frequently do you Engage in the following environmentally friendly practices?



- **Problem 3:** To identify the relation between Gender and engagement of youth in sustainable practices.
- **H0:** There is no significant difference between then mean of gender and engagement of youth in sustainable practices.

	Gender	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
Engagement in sustainable practices	Male	49	1.98	.642	.092
	Female	51	1.76	.528	.074

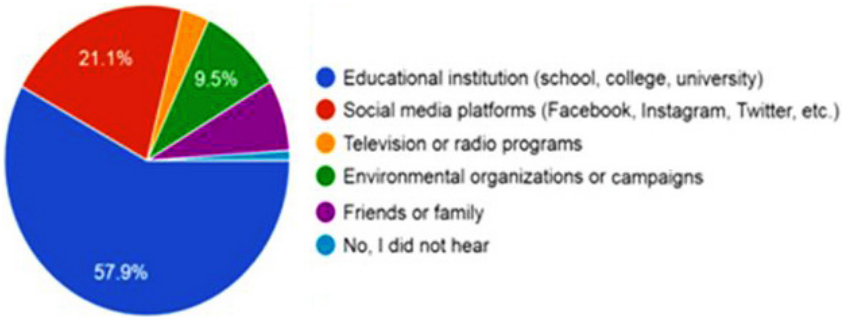
T-test Analysis

		Levene's Test for Equality of Variances		*T-Test for Equality of Means*				
		F	*Signifi-cance*	*T*	*Degree of Freedom*	*Signifi-cance (2-tailed)*	*Mean Difference*	*Standard Error Difference*
Engagement in sustainable practices	Equal variances assumed	3.225	0.76	1.862	98	0.66	0.219	0.117
	Equal variances not assumed			1.855	92.949	0.67	0.219	0.118

Interpretation

Under the assumption of equal variances, the t-statistics is 1.862, df = 98 and p-value = 0.066. The p-value is greater than 0.05, this imply that there is no significant difference in the means of gender and engagement of youth in sustainable practices.

Question: Indicate the primary source of information about of green economy.



The figure show that most of the youth primary source of information about green economy are the Educational institutes followed by social media platforms.

FINDINGS AND DISCUSSION

The present study explored the awareness of youth of India regarding the concept of green economy through the questionnaire. The result show that youth familiarity with the concept of green economy is high. From the sample of 100 people, 87 respondents are familiar with this concept. Their engagement in Sustainable practices are also good. But the youth is not so aware with the government initiatives which are taken by government for green economy. By the feedback from the respondents, it is found that youth awareness regarding green economy can be improved through strengthening environmental education in school and colleges and by running awareness campaign on social media platforms. The findings of the study shows that youth are willing to play an active role in promoting the green economy but despite their willingness in promoting green economy, there are certain barriers that hinders youth engagement. The study find that lack of awareness regarding government initiatives, and youth involvement are the key barriers. By addressing these barriers, the societies can utilize the energy of youth to drive meaningful change towards greener and more sustainable future.

SIGNIFICANCE OF STUDY

Understanding the level of awareness among youth regarding the green economy can help to promote the sustainable consumption and production practices. The study can give information on the effectiveness of awareness campaigns and environmental education programs that targeting youth. By identifying the gaps and misconceptions in their knowledge, the study can help in designing educational programs to enhance awareness, knowledge and understanding

of the green economy among the youth of India. This study can provide valuable information for policymakers to design and implement effective strategies, programs, and policies that targeting the youth population to promote a green economy.

FUTURE SCOPE OF THE STUDY

The study just explored the level of awareness among youth regarding the concepts of green economy. In further studies it can be checked what factors influence their level of awareness and how to improve the engagement of youth in sustainable practices. Further studies can be carried out on a large sample for better understanding the awareness of green economy among youth.

REFERENCES

[1] Al-Balushi, A., Ramadan, E., Zakaria, S., & Al Dairi, H. (2022). Attitudes towards Green Economy Concerns among Higher Education Students in Oman. *American Journal of Climate Change*, 11(4), 331–341.

[2] Barbier, E.B., & Markandya, A. (2013). A new blueprint for a green economy. Routledge.

[3] D'amato, D., Droste, N., Chan, S., & Hofer, A. (2017). The green economy: Pragmatism or revolution? Perceptions of young researchers on social ecological transformation. *Environmental Values*, 26(4), 413–435.

[4] Kanchanapibul, M., Lacka, E., Wang, X., & Chan, H.K. (2014). A empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production*, 66, 528–536.

[5] Maria M., Lanisy, N., & Ginting, G. (2022, November). Strengthening the Role of the Young Generation as the Influencers to Accelerate the Implementation of Green Economy: A Co-Creation Value Perspective. In *Journal of International Conference Proceedings* (*JICP*), Vol. 5, No. 4, pp. 224–238.

[6] Organisation for Economic Co-operation and Development (2011). OECD Green Growth Strategy. https://www.oecd.org/greengrowth/greengrowthstrategy.html

[7] Tuncer, G., Sungur, S., Tekkaya, C., & Ertepinar, H. (2005). Young Attitude on Sustainable Development: A Case Study. *Hacettepe University Journal of Education*, 29, 187–193.

[8] United Nations Environment Programme (n.d.). Green Economy Initiative. https://www.unep.org/greeneconomy

[9] World Bank (2011). Inclusive Green Growth: The Pathway to Sustainable Development. http://documents1.worldbank.org/curated/en/758171468338627521/pdf/615040PUB0EPI00Box03615 12B01PUBLIC1.pdf

[10] Yacub, R., Herlina, H., & Himawan, I.S. (2021, May). The Effects of Sustainability Orientation, Sustainability Education, and Risk Perception Towards Green Entrepreneurship Among Young Generations. In *Ninth International Conference on Entrepreneurship and Business Management* (*ICEBM 2020*), pp. 538-545, Atlantis Press.

Necessity of Green Economy: Role of Green Economy in Sustainable Development in India

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Abstract

The green economy is low-carbon, resource-efficient, and socially inclusive. Employment and income growth in a green economy are supported by public and private investments in green economic activities, green infrastructure and assets that enable carbon emissions and pollution to be reduced, energy and resource efficiency to improve, and biodiversity and ecosystem services to be preserved. The idea of a green economy does not supplant sustainable development but moves attention to economic, capital, and infrastructure sectors, as well as to employment, skills, and social and environmental effects. The results suggest that the shift in the economy towards green ecology has laid the foundation for sustainable development. A green economy is a foundation for implementation of sustainable development based on more efficient use of resources and consumption, decarbonisation, environmental impact reduction, and the development of a socially integrated society. The paper examines green economy concepts and the role of the green economy in sustainable development and various initiatives taken by Indian government to boost green economy.

Keywords: *Green Economy, Sustainable Developments.*

INTRODUCTION

The field of green economy research and its implications for sustainable development has become a focal point for many researchers, particularly in the past few years. The term 'green economy' was coined at the 1992 Rio+20 conferences in Rio de Janeiro by the United Nations (UN). The term 'sustainable development' was first defined by Brundtland (Brundtland, 1987) as a 'development that satisfies the requirements of the present generations without impairing the capacity of future generations to satisfy their own requirements' (WECD, 1987). The term is still widely used by international organizations (e.g. The World Bank, 2012, UNEP, 2011). Green economy frameworks and processes play an important role in on-going discussions about the kinds of economic and social transformations needed to achieve sustainability, reduce emissions, promote social justice, and create stable economies. For instance, decarbonising the world requires radical shifts in energy policy. The green economy approach also has the advantage of ensuring that when national, subnational and global implementation strategies are developed, the SDGs and post-2015 agenda can bridge

the gaps between them. Sustainability is a multi-faceted concept that encompasses economic, ecological and social growth. Sustainability across industries requires careful planning based on resource constraints, green practices and continuous monitoring. The green economy is not just about one industry or sector, It covers a wide range of sectors, such as energy, transport, production, agriculture, construction, and services. The green economy needs cooperation and engagement from governments, companies, civil society, and individuals. The green economy is grounded in environmental economics, which balances the interdependence between economic systems and a group of natural systems. The green economy uses resources and energies in an optimal way, as they are not produced in an unfair way, but in a way that harmonizes and protects the environment.

REVIEW OF LITERATURE

Manish Verma (2023) the study found that the green economy is a new way of thinking about economic development that focuses on reducing environmental impact and promoting social sustainability. It includes a wide range of industries, policies, and processes that incorporate environmental considerations into economic decisions. It provides the opportunity to tackle the environmental issues of timely and build a better world for future generations. **Valerii Bondarenko (2023)** green" economy is the result of the implementation of measures to resolve economic, political, educational and legal issues, as well as the implementation of organizational elements of state support for economic transformation at national, sector and regional levels. To ensure sustainable development and implementation of the concept of green economy it is necessary to further improve the legal, organizational and financial mechanisms to stimulate green investments in promising, environmentally friendly sectors of the economy, as well as to adapt the progressive world experience in this area. **Nahla Chaaben (2022)** found that the It is essential to encourage the green economy in order to not only enhance the economic, political, and social potential, but also to create a sustainablefuture.Accordingly,it pivotal that policy makers develop some technological fiscal and environmental programs. These policies can help take advantage of the strengths, especially that the on launching and establishing strategies and initiatives that go in line with the SDGs achievement and green economy development. **Inna Tomashuk (2022)** found that the successful implementation of the "green" economy, which aims to meet the global objective of sustainable development (SDG), can be accomplished by raising funds with a focus on the transition to a socially responsible, resource-efficient, and low carbon economy that promotes social progress. **Liton Chandra (2022)** the green economy provides Bangladesh with the potential to attract investment in green assets and renewable energy that will contribute to development, poverty reduction and job creation in the long term. Public and private funds can be invested in sustainable agriculture, sustainable fishing, biodiversity management, technology, education, and infrastructure. **R. Ravichandran (2022)** the study found that Green Procurement and Artificial Intelligence in the Circular Economy beneficial for companies and society. As the global challenges of climate change, population increase, resource constraints, achieving

sustainable development objectives, and income inequalities across economies and sectors ,green economy is way to overcome these bottlenecks. **Suaad Hadi Hassan (2021)** Green economy is a way of sustainable developments. The efficiency gains in the agriculture, industry and municipal sectors result from the increased demand for water, which in turn reduces the pressure on groundwater and surface water in both the short and the long term. Thus, the green economy helps alleviate poverty through the prudent management of natural resources and ecosystems. This is so that the benefits of natural capital can flow to the poor and other vulnerable groups. **Olga Lavrinenko (2019)** The green economy concept has been described as a "long-term plan" for national economies in order to overcome the crisis, with the goals of economic recovery, poverty reduction, decarbonisation, and halting the decline of ecosystems. **Huizi Ma (2023)** green economy has an emerging sector of the economy, it has the potential to control and mitigate carbon emissions, catalyse the transformation of capital-intensive sectors, and drive sustainable economic growth. **Veronika Chala (2021)** found that the green economy model balances the economic needs of society with the constant need for recovery and environmental protection. In order to achieve balanced development, governments, businesses and individuals must invest in natural capital, such as increasing the proportion of protected areas and strengthening forest protection focus on food security and clean food; focus on land use, and land use management; optimise resource allocation and improve resource management.

OBJECTIVE OF THE STUDY

- To comprehend Green economy.
- To understand the role of Green economy in sustainable development.
- To study the specific initiative taken by Indian government to boost green economy.

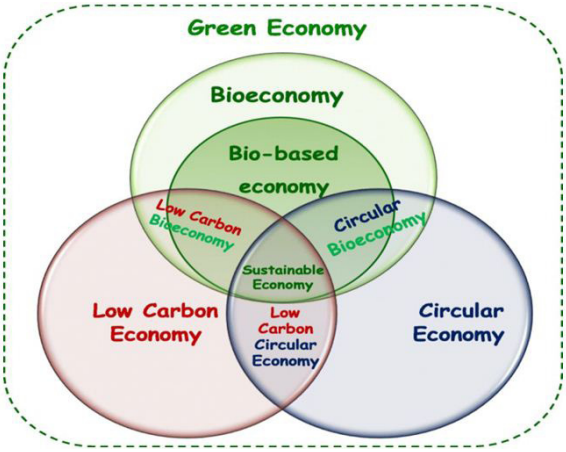
RESEARCH METHODOLOGY

This paper is a comprehensive descriptive study. Secondary data and information has been analysed for the purpose of preparing the paper. Secondary information has been taken from various academic sources, such as books, journal articles, conference papers, working papers, and websites.

GREEN ECONOMY

The term green economy was first introduced in a 1989 report for the Government of the United Kingdom by a group of leading environmental economists, entitled Blueprint for a Green Economy (Pearce, Markandeya, and Barbier, 1989). The green economy is a form of economic system that seeks to reduce environmental risks and environmental shortages, and that seeks to achieve sustainable development without causing harm to the environment. Low carbon economy, effective resource use, and social inclusion are terms used to describe a green economy. In a green economy, public and private investment in such economic activities,

infrastructure, and assets that will contribute to reducing CO2 emissions and pollution, improving energy efficiency as well as preventing loss of biodiversity and ecosystem services leads to increased employment and income. The long-term view of the green economy is focused on how resources are leveraged to create value for society. It does not limit the green economy to low-carbon fuels; it is also about how resource efficiency and resource sufficiency can be leveraged to create prosperity, resilience, and well-being for today's and tomorrow's citizens–while respecting the ecological limits of our planet. From well-being investments to sustainable processes, the green economy model is inclusive. It is a model that not only improves well-being but also ensures a substantial reduction in environmental threats and resource shortages. The International Chamber of Commerce (ICC), representing global business, defines the green economy as "one that results in improved human well –being and social equity, while significantly reducing environmental risk and ecological scarcities.



Source: www.adda47.com

Role of Green Economy in Sustainable Development

Sustainability is a concept that encompasses economic, ecological, and social development. We can implement sustainability across different sectors. It requires careful planning based on resources, green practices, and monitoring of their progress. A holistic approach to sustainability focuses on practices that improve quality of life, natural resources availability without degrading them, and the concept of mindfulness. Environmental ecosystems and their interactions with artificial systems, including social behaviors. In short, meeting our own needs without sacrificing the needs of future generations is the fundamental concept of sustainability. Sustainable development is the practice of promoting human development goals while protecting natural systems and natural resources. This concept was first recognized in 1987 by the World Commission for Environment and Development, WCED, in its report. The UNO has adopted the roadmap to sustainable development through the 2030 agenda for sustainable development goals (SDGs). The SDGs are a set of seventeen objectives that help member countries to achieve sustainable development in a variety of

fields. India welcomes the adoption of the SDGs by the UNO. The Indian government has entrusted coordinating the targets of the SDGs to the think tank, NITI Aayog. India is on the path to achieving these objectives through the mapping and monitoring of schemes including centrally-sponsored schemes and state-sponsored schemes. Initiatives such as Stat Bharat – Sanatan Bharat (sustainable India), swatch Bharat Mission (clean India), and sashakt Bharat – sabal Bharat (empowered and resilient India), universal health coverage (health coverage) and samagra bharat Saksham Bharat (inclusive and entrepreneurial India) are the building blocks for implementing the wider sustainability agenda. These initiatives reflect reforms in the areas of economic empowerment, environment, infrastructure, renewable energies, hygiene, and health. Following up on the identification, planning, and implementation of the SDGs, it is important to monitor its progress. One indicator that provides a fair assessment of the achievement of the SDGs is the SDG Indicator and Dashboard, created by NITI Ayog. The SDG Indicator score for 2020-21 stood at 66, as compared to 60 in the previous year and 57 in 2018-19. Since 2014, India has been the most rapid among major economies to add renewable energy capacity. India is largest renewable energy producer with 40% of energy capacity installed in the year 2022 coming from renewable sources. India reached the target of blending 10% ethanol into petrol 5 months early and stressed that it will aim to blend 20 ethanol in petrol in 2025-26 rather than 2030 India will have a capacity of 500 GW by 2030. India has launched E20 fuel with a focus on biofuels. India is prioritizing the development of waterways to promote water-based transport and green cargo handling. India needs to increase the capacity of its battery storage to 125 kWh within the next 6 to 7 years. India aim to produce 5 million tonnes (Mt) of green hydrogen under the national green hydrogen mission. A dedicated allocation of Rs 19,000 crores has been allocated to encourage the private sector to engage in this field. Other areas of focus include electrolyzers, green steel, and long-distance fuel cells. The vision of «Life» (Lifestyle for Environment) is to move the country and the world towards an «environmentally conscious lifestyle. India is firmly on track to achieve the panchamrit of net-zero carbon emissions by 2070 to bring about a green industrial and economic transformation.



Different Initiatives taken by Government to Boost Green Economy

The Union Budget 2023-24 has proposed various projects and initiatives like Green Hydrogen Mission, Energy Transition, Energy Storage Projects, Renewable Energy Evacuation, Green Credit Program, PM-PRANAM, GOBARdhan Scheme, Bhartiya Prakritik Kheti Bio-input resources centre. Green growth is essential for the country's future, and finding solutions to current challenges is essential for forward motion. New-age reforms are essential to find solutions to current challenges. The green energy announcements in the budget play a key role in establishing India as a leading player in the global green energy market. This is due to the the country's investment in green energy, which has become more significant over the past few years.

Table 1: Government Initiatives to Boost Green Economy

Green Hydrogen Mission	The project will generate a renewable hydrogen production capacity of 5 million metric tons per year by 2030. This capability will facilitate the gradual decarbonisation of Indian enterprises, decrease their dependence on imported fossil fuel sources, and establish technical and market dominance in this nascent sector.
Atamnirbar Clean Plant Programme	Aimed to increase the supply of high-value horticultural crops using disease-free planting material.
Clean Energy Transisition	Shifting energy production away from sources that emit a lot of greenhouse gases, such fossil fuels, to one that emit little or no greenhouse gases.
Urban Swach Bharat Mission 2.0	In this mission focus will be on sludge management, waste water management, segaration of garbage, reduction in use of plastic reduction air pollution by managing all activity.
Green Skill Developments Programme	It aims to produce technically skilled individuals who are environmentally conscious and supportive of sustainable developments.
Climate Resilience Building Among the Farmers Through Crop Residue Management	The aim is to the mitigate climate change impacts and improves adaptive capacity and counter adverse environmental impacts arising from stubble burning.
Swachh – Nirmal Tat Abhiyaan	To keep beaches safe and make people aware of the value of coastal habitats – in Beaches across ten states / UTs.
National Action Plan on Climate Change (NAPCC)	To pursue a sustainable development course that meets economic and environmental goals at the same time.
National Green Corps 'Ecoclub'	The aim of this scheme is to Empower school children with the skills that they need to protect the environment through a range of activities that involve observing, researching, surveying, documenting, studying, and making decisions.
PM KUSUM	The PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) scheme is aim to enable farmers to setup solar power generation capacity on their dry land and sell surplus power to the grid. It is helpful to farmers enhance their income.

Gobardhan Yojana	India has the capacity to produce 10,000 million cubic metres of biogas from cow manure. And 1.5 lakhs cubic meters of gas which can contribute up to 8% to the city gas distribution in the country. The Gobardhan Yojana is a critical part of India's biofuel strategy. The government announced intentions to build 500 new waste-to-wealth facilities in this budget. The GOBAR-DHAN plan is being implemented by the Department of Drinking Water as part of the Swachh Bharat Mission Garmin-Phase 2 initiative.
India's vehicle scrapping policy	By reducing pollution, the policy should preserve the substance of a circular economy. It is also expected to create job opportunities and boost demand for new vehicles. The principle of Reuse, Recycle, and Recovery is expected to give new strength to our circular economy. The new policy states that commercial vehicles over 15 years old and passenger vehicles over 20 years old will be compulsorily scraped if they fail the fitness test.
PM PRANAM	Main objective of this scheme is to promote the balanced use of chemicals and promote green growth reduce the negative impact on the environment.
Green credit programme	The Green Credit program notified under the Environment (Protection) Act. The Green Credit program is a way to encourage behavioural change in order to protect the environment.
Mishti and amrit darohar	Misti Initiative will focus on the planting of mangroves in coastal and salt pan areas, where feasible, through the collaboration of MGNREGA and CAMPA Fund, as well as other sources. Amrit Darohar's initiatives also focused on the optimal utilization of wetland and the enhancement of biodiversity.

Source: https://www.clearias.com/green-growth/

India Status as Green economy

According to environments performance index of 2022 India rank was 169th out of 180 nations. Here are the ranking details for some indicators in India: Air Quality (179), Sanitation and Drinking Water (139), Waste Management (103), Biodiversity and Habitats (149), Fisheries (36), Climate Change (106). According to another research, excessive heat in 2021 cost India

Table 2: Performance of Countries

Countries	*Environmental Performance Score*	*Rank Out of 180 Countries*	*GDP Rank*
United Kingdom	81.3	4	5
Germany	77.2	10	4
Japan	75.1	12	3
USA	69.3	24	2
China	37.3	120	1
India	27.6	169	6

Source: https://www.aranca.com/knowledge-library/articles/investment-research/india-as-a-green-economy

5.4% of its GDP and 167 billion potential labour hours. With the country seeing 314 days of extreme weather events in 2022 and climate change making heat waves 30 times more frequent in India, so green growth becomes more important.

The extent of green growth in India will depend on its ability to reduce dependence on resources needed to support economic growth over time. Green growth has the potential to help balance these demands. However, managing public debt and fiscal deficits, two major impediments to national policymaking, may stymie the technical improvements essential for green growth. Furthermore, trade balance would play a significant influence in macroeconomic strategies. The Indian economy must continue to grow in order to accomplish its development goals.

CONCLUSION

In recent years, the notion of a green economy has gained support as a viable solution to the concerns of climate change, biodiversity loss, and unsustainable development practices. The Green Economy has the ability to provide several advantages, such as job development, economic growth, environmental preservation, social inclusion, and resilience. As the globe faces huge issues relating to climate change and unsustainable development practises, the notion of a green economy provides a hopeful way ahead. The Green Economy is a concept that envisions a low-emission, sustainable world that benefits both our society and the earth. It entails sustainable development that ensures GDP growth while also preserving and protecting environment and ensuring human and societal well-being. Finally, sustainable development involves the ability to live fairly and dignifiedly without damaging the environment and ecosystems from which we draw necessary resources for our life and the survival of future generations. This transition will be difficult, but it is necessary if we want to achieve the Sustainable Development Goals. Moving to a green economy has the potential to deliver historic levels of sustainable development and poverty eradication, with remarkable speed and effectiveness.

REFERENCES

[1] Adamowicz, M. (2022). Green Deal, Green Growth and Green Economy as a Means of Support for Attaining the Sustainable Development Goals. *Sustainblity*.

[2] Al-Taai, S.H. (2021). Green economy and sustainable development. *International Journal of Enviormental Sciences*.

[3] Bondarenko, V. (2023). Green Economy as a Prerequisite for SustainableDevelopment: Analysis of International and Ukrainian experience. *European Journal of Sustainable Developments*.

[4] Chala, V. (2021). Green Economy Development:Methodological Approach. *Baltic Journal of Economices Studies*.

[5] Hamdi1, N.C. (2022). Green economy performance and sustainable development achievement: empirical evidence from Saudi Arabia. *Enviorment Development and Sustainbility*.

[6] Ma, H. (2022). How Does Green Finance Affect the Sustainable Developmentof the Regional Economy? Evidence from China. *Sustainblity*.

[7] Olga Lavrinenko1, S.I. (2019) The Role of Green Economy in Sustainable Development (Case Study: The EU States). *Enterenurship and Enviorment Sustainblity*.

[8] Ravichandran, M.R. (2021). Green and Sustainable Procurement in Economy – The Linkage Between Sustainable Growth and Green Procurement: An Indian Perspective. *South India Journal Of Social Sciences*.

[9] Tomashuk, I. (2022). Green Economy as a Guarantee of Sustainble Developments. *Three Sea Economic Journal*.

[10] Tyagi, D.V. (2017). Green Economy in India: Possibilities and Challenges. *International Journal of Social Sciences*.

[11] Verma, M. (2023). The Future of Work for Green Economy. *IJSRT Journal*.

[12] Voumik, L.C. (2021). A green Economy in the Context of Sustainable Development and Poverty Eradication: What are the Implications for Bangladesh? *Journal of Economices and Sustainble Devlopments*.

[13] https://www.aranca.com/knowledge-library/articles/investment-research/india-as-a-green-economy.

[14] https://www.thehindubusinessline.com/books/a-green-economy-indias- sustainable-development/article66737206.ece

Global Economic Challenges

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Abstract

Global covid crisis has enhanced the use of information technology in rural areas. Hence stagnant economy shift to subsistence economy. According to Brundtland Commission in 1987 is ,"Sustainable development is development that meets the needs of the present generation without impairing/reducing the ability of future generations to meet their own needs. This paper emphasis over the literature represent the global economic challenges. Inspite of increment of information technology financial literacy issue combat financial inclusion to withstand economic development in rural areas that is major scenario in economic challenges globally.

To blossom economy, a strategy to blossom of flowers to be followed with proper intention. Irrigate investment in majors factors of global economy and counterpart with proper care for developing rural areas standard of living. This will encourage the inner talent of people to do something for country, whether to do small business, be educated, financial literate or to learn something new. The major factors that encourage the global economy are natural resources, infrastructure, population, labour, human capital, technology, law. According to global risks report 2023 – The global economy is under pressure from multiple complex and interconnected crisis. These challenges which include inflation, climate change, the war in Europe, supply chain disruptions and the COVID – 19 pandemic, to name a few have coalseed into what experts have called a polycrisis. In a economic analysis by Department of Economic and Social Affairs, a paper ' World Economic Situation and Prospects : February 2023 ; The world economy faces multiple mutually reinforcing shocks : The pandemic, global food crisis, climate risks hinders the talent power. Rapid interest rates hikes put pressures on loan bearing traders. High inflation is disrupting real incomes, challenging a global cost of living that has punished millions into poverty and basic needs fulfillment hardships. Policy makers face difficult trade offs in steering their economies through the current crises and supporting an inclusive and sustainable recovery. Financial inclusion have great impact on macroeconomic indicators. Increasing deposits with advancement of information technology in rural areas increase development in various areas like infrastructure, employment sector that directly or indirectly give fruitful results to enhance economic development.

After harvesting, the farmers need to assemble their produce on the farm, process it, grade it, package it and store it before it is finally brought to the market for sale. In order to improve the system of agricultural marketing, the government in India has initiated a series of measures like regulated markets, provision of Physical Infrastructure, Cooperative Agricultural Marketing Societies, Policy Instruments like buffer stock maintainence, PDS (Public Distribution System), MSP (Minimum Support Price). The challenges in Rural Development includes challenge of

rural credit and rural marketing. Other emerging challenges are diversification of productive activities and organic farming. IT revolution is promoting Indian economy as a knowledge economy. It highlights the significance of human capital as an important determinant of growth, beyond the significance of physical and financial capital.

Keywords: *Information Technology, Rural Development, Economic Challenges, Economic Development.*

INTRODUCTION

Change is the law of the world. In a moment one become the owner of millions and other become penniless.

– Lord Krishna

The world economy is the economy of all humans of the world, representing to the global economic system, which includes all economic activities which are conducted both within and between nations, including production, consumption, economic management, work in general, exchange of financial values and trade of goods and services. Setting an example for India dominancy over handicrafts, which at one time enjoyed global reputation, suffered a systematic destruction during the British rule. It was largely owing to discriminatory policy of the British government. While cheaper industrial goods were allowed tariff free access to the Indian markets, handicraft products from India were subjected to heavy export – duty. Handicrafts in India lost both domestic as well as international market. Growth of modern industry was in arrears. Similarly, Indian agriculture under the British rule showed challenges like Low production and productivity, Exploitative land settlement system, Forced commercialization of agriculture, Lack of investment in the agriculture infrastructure, Gulf between owners of the soil and tillers of the soil. These challenges are prevailing in every sectors, every country parts, rural areas globally. Whether the dominant power of developed country hinders the progress of developing countries or the system undergoes with overwhelmed various other factors including Stagnant economy, Backward economy, dominance of one profession like agricultutre, suffered industrialization, heavy dependence on imports, limited urbanization, semi feudal economy. More than 72 percent of working population was engaged in primary sector, industry offered employment merely to 9 percent of the working population. This is yet another pointer to economic and social backwardness of a country. Also demographic profile showed high birth rate, high death rate, high infant mortality rate, low expectancy of life and low rate of literacy. These characteristics point to economic and social backwardness of the country. Pointing towards infrastructure – economic as well as social – continued to be highly deficient in maximum parts of the world which hinders the talent to reach to shining point.

Fintech in Society 5.0 accomplishes fintech driven financial inclusion into higher economic growth.Over the last decade, 1.2 billion previously unbanked adults gained access to financial services and the unbanked population fell by 35% primarily boosted by the increase in money accounts. (“World Bank Report”).

REVIEWED SUMMARY IN WORLD ECONOMIC OUTLOOK

It Was Never Going to Be an Easy Ride

Pierre-Olivier Gourinchas Economic Counsellor

(*Source:* imf.org)

On the surface, the global economy appears poised for a gradual recovery from the powerful blows of the pandemic and of Russia's unprovoked war on Ukraine. China is rebounding strongly following the reopening of its economy. Supply-chain disruptions are unwinding, while the dislocations to energy and food markets caused by the war are receding. Simultaneously, the massive and synchronous tightening of monetary policy by most central banks should start to bear fruit, with inflation moving back toward its targets. In our latest forecast, global growth will bottom out at 2.8 percent this year before rising modestly to 3.0 percent in 2024. Global inflation will decrease, although more slowly than initially anticipated, from 8.7 percent in 2022 to 7.0 percent this year and 4.9 percent in 2024. Notably, emerging market and developing economies are already powering ahead in many cases, with growth rates (fourth quarter over fourth quarter) jumping from 2.8 percent in 2022 to 4.5 percent this year. The slowdown is concentrated in advanced economies, especially the euro area and the United Kingdom, where growth (also fourth quarter over fourth quarter) is expected to fall to 0.7 percent and –0.4 percent, respectively, this year before rebounding to 1.8 and 2.0 percent in 2024. Below the surface, however, turbulence is building, and the situation is quite fragile, as the recent bout of banking instability reminded us. Inflation is much stickier than anticipated even a few months ago. While global inflation has declined, that reflects mostly the sharp reversal in energy and food prices. But core inflation, excluding the volatile energy and food components, has not yet peaked in many countries. It is expected to decline to 5.1 percent this year (fourth quarter over fourth quarter), a sizable upward revision of 0.6 percentage point from our January update, well above target. Activity too shows signs of resilience as labor markets remain historically tight in most advanced economies. At this point in the tightening cycle, we would expect to see stronger signs of output and employment softening. Instead, both output and inflation estimates have been revised upward for the past two quarters, suggesting stronger-than-expected demand, which may require monetary policy to tighten further or to stay tighter for longer. Should we worry about the risk of an uncontrolled wage-price spiral? Nominal wage inflation continues to lag far behind price inflation, implying a steep and unprecedented decline in real wages. Given the tightness in labor markets, this is unlikely to continue, and real wages should recover. Corporate margins have surged in recent years—this is the flip side of steeply higher prices but only modestly higher wages—and should be able to absorb rising labor costs on average. As long as inflation expectations remain well anchored, that process should not spin out of control. It may well, however, take some time. More worrisome is that the sharp policy tightening of the past 12 months is starting to have serious side effects for the financial sector, as we have repeatedly warned might happen (October 2022 Global Financial Stability Report; January 2023 World Economic Outlook

[WEO]. Following a prolonged period of muted inflation and extremely low interest rates, last year's rapid tightening of monetary policy has triggered sizable losses on long-term fixed-income assets. The stability of any financial system hinges on its ability to absorb losses without recourse to taxpayers' money. The financial instability last fall in the gilt market in the United Kingdom and the recent banking turbulence in the United States with the collapse of a few regional banks illustrate that significant vulnerabilities exist both among banks and nonbank financial institutions. In both cases the authorities took quick and strong action and have been able to contain the spread of the crisis so far (April 2023 Global Financial Stability Report). Yet the financial system may well be tested again. Once again, downside risks dominate. Nervous investors often look for the next weakest link, as they did with Credit Suisse, a globally systemic but ailing European bank. Financial institutions with excess leverage, credit risk or interest rate exposure, too much dependence on short-term funding, or located in jurisdictions with limited fiscal space could become the next target. So could countries with weaker perceived fundamentals. A sharp tightening of global financial conditions—a "'risk-off" shock—could have a dramatic impact on credit conditions and public finances especially in emerging market and developing economies, with large capital outflows, a sudden increase in risk premia, a dollar appreciation in a rush toward safety, and major declines in global activity amid lower confidence, household spending, and investment. In such a severe downside scenario, global GDP per capita could come close to falling— an outcome whose probability we estimate at about 15 percent. We are therefore entering a perilous phase during which economic growth remains low by historical standards and financial risks have risen, yet inflation has not yet decisively turned the corner. More than ever, policymakers will need a steady hand and clear communication. The appropriate course of action is contingent on the state of the financial system. As long as the latter remains reasonably stable, as it is now, monetary policy should stay firmly focused on bringing inflation down. A silver lining is that the banking turmoil will help slow aggregate activity as banks curtail lending in the face of rising funding costs and of the need to act more prudently. In and of itself, this should partially mitigate the need for further monetary policy tightening. But any expectation that central banks will abandon the fight against inflation would have the opposite effect: lowering yields, supporting activity beyond what is warranted, and complicating the task of central banks. Tighter fiscal policy can also play an active role. By cooling off economic activity, it would support monetary policy, allowing real interest rates to return faster to their low natural level. Appropriately designed fiscal consolidations will also help rebuild much needed fiscal buffers and help strengthen financial stability. Should a systemic financial crisis loom large, a careful and timely recalibration of policy will be needed to safeguard both the financial system and economic activity. It is important to stress that this is not where we are, even if more financial tremors are bound to occur. Regulators and supervisors should act now to ensure these do not morph into a fullblown financial crisis by actively managing market strains and strengthening oversight. For emerging market and developing economies, this also means ensuring proper access to the global financial safety

net, including the IMF's precautionary arrangements, and access to the Federal Reserve repurchase facility for Foreign and International Monetary Authorities or to central bank swap lines, where relevant. Exchange rates should adjust as much as possible unless doing so raises financial stability risks or threatens price stability, in line with our Integrated Policy Framework. Finally, our latest projections also indicate an overall slowdown in medium-term growth forecasts. Fiveyear-ahead growth forecasts declined steadily from 4.6 percent in 2011 to 3.0 percent in 2023. Some of this decline reflects the growth slowdown of previously rapidly growing economies such as China and Korea. This is predictable: Growth slows down as countries converge. But some of the more recent slowdown may also reflect more ominous forces: the scarring impact of the pandemic; a slower pace of structural reforms, as well as the rising threat of geoeconomic fragmentation leading to more trade tensions; less direct investment; and a slower pace of innovation and technology adoption across fragmented 'blocs'. A fragmented world is unlikely to achieve progress for all or to allow us to tackle global challenges such as climate change or pandemic preparedness. We must avoid that path at all costs. Tentative signs in early 2023 that the world economy could achieve a soft landing—with inflation coming down and growth steady—have receded amid stubbornly high inflation and recent financial sector turmoil. Although inflation has declined as central banks have raised interest rates and food and energy prices have come down, underlying price pressures are proving sticky, with labor markets tight in a number of economies. Side effects from the fast rise in policy rates are becoming apparent, as banking sector vulnerabilities have come into focus and fears of contagion have risen across the broader financial sector, including nonbank financial institutions. Policymakers have taken forceful actions to stabilize the banking system. As discussed in depth in the Global Financial Stability Report, financial conditions are fluctuating with the shifts in sentiment. In parallel, the other major forces that shaped the world economy in 2022 seem set to continue into this year, but with changed intensities. Debt levels remain high, limiting the ability of fiscal policymakers to respond to new challenges. Commodity prices that rose sharply following Russia's invasion of Ukraine have moderated, but the war continues, and geopolitical tensions are high. Infectious COVID-19 strains caused widespread outbreaks last year, but economies that were hit hard—most notably China—appear to be recovering, easing supply-chain disruptions. Despite the fillips from lower food and energy prices and improved supply-chain functioning, risks are firmly to the downside with the increased uncertainty from the recent financial sector turmoil. The baseline forecast, which assumes that the recent financial sector stresses are contained, is for growth to fall from 3.4 percent in 2022 to 2.8 percent in 2023, before rising slowly and settling at 3.0 percent five years out—the lowest medium-term forecast in decades. Advanced economies are expected to see an especially pronounced growth slowdown, from 2.7 percent in 2022 to 1.3 percent in 2023. In a plausible alternative scenario with further financial sector stress, global growth declines to about 2.5 percent in 2023—the weakest growth since the global downturn of 2001, barring the initial COVID-19 crisis in 2020 and during the global financial crisis in 2009—with advanced economy growth falling below 1 percent. The anemic

outlook reflects the tight policy stances needed to bring down inflation, the fallout from the recent deterioration in financial conditions, the ongoing war in Ukraine, and growing geoeconomic fragmentation. Global headline inflation is set to fall from 8.7 percent in 2022 to 7.0 percent in 2023 on the back of lower commodity prices, but underlying (core) inflation is likely to decline more slowly. Inflation's return to target is unlikely before 2025 in most cases. Once inflation rates are back to targets, deeper structural drivers will likely reduce interest rates toward their pre-pandemic levels. Risks to the outlook are heavily skewed to the downside, with the chances of a hard landing having risen sharply. Financial sector stress could amplify and contagion could take hold, weakening the real economy through a sharp deterioration in financing conditions and compelling central banks to reconsider their policy paths. Pockets of sovereign debt distress could, in the context of higher borrowing costs and lower growth, spread and become more systemic. The war in Ukraine could intensify and lead to more food and energy price spikes, pushing inflation up. Core inflation could turn out more persistent than anticipated, requiring even more monetary tightening to tame. Fragmentation into geopolitical blocs has the scope to generate large output losses, including through its effects on foreign direct investment. Policymakers have a narrow path to walk to improve prospects and minimize risks. Central banks need to remain steady with their tighter anti-inflation stance, but also be ready to adjust and use their full set of policy instruments—including to address financial stability concerns—as developments demand. Fiscal policymakers should buttress monetary and financial policymakers' actions in getting inflation back to target while maintaining financial stability. In most cases, governments should aim for an overall tight stance while providing targeted support to those struggling most with the cost-of-living crisis. In a severe downside scenario, automatic stabilizers should be allowed to operate fully and temporary support measures be utilized as needed, fiscal space permitting. Medium-term debt sustainability will require welltimed fiscal consolidation but also debt restructuring in some cases. Currencies should be allowed to adjust to changing fundamentals, but deploying capital flow management policies on outflows may be warranted in crisis or imminent crisis circumstances, without substituting for needed macroeconomic policy adjustment. Measures to address structural factors impeding supply could ameliorate medium-term growth. Steps to strengthen multilateral cooperation are essential to make progress in creating a more resilient world economy, including by bolstering the global financial safety net, mitigating the costs of climate change, and reducing the adverse effects of geoeconomic fragmentation.

RESEARCH DATA (JUNE 2023)

Source : (OECD)

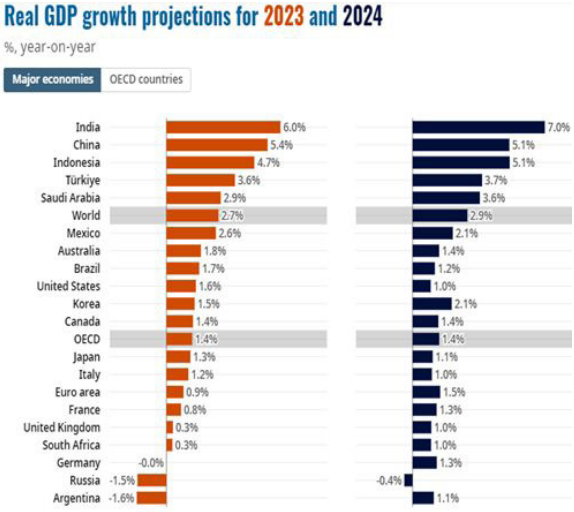
Global Growth has Stabilised, But the Improvement is Fragile

Global GDP growth in 2023 is projected to be 2.7%, the lowest annual rate since the global financial crisis, with the exception of the 2020 pandemic period. A modest improvement to

2.9% is foreseen for 2024. Annual OECD GDP growth is projected to be below trend in both 2023 and 2024, although it will gradually pick up through 2024 as inflation moderates and real incomes strengthen.

2.7% → 2.9%

Projected global growth in 2023 and 2024

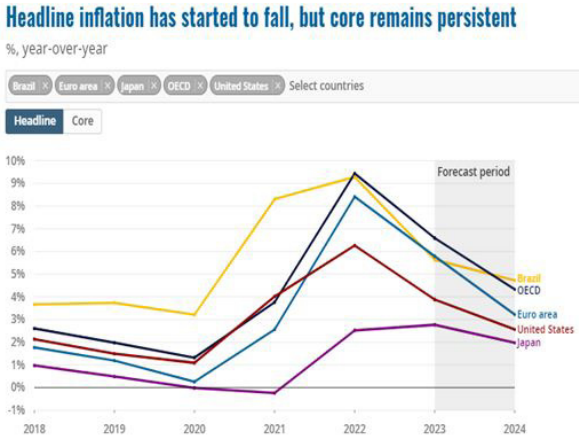


Underlying Inflation Pressures Remain High

Headline inflation has fallen in most economies in recent months due to the downturn in energy prices, even though food and services prices have continued to rise rapidly. Core inflation remains stubbornly high.

6.6% → 4.3%

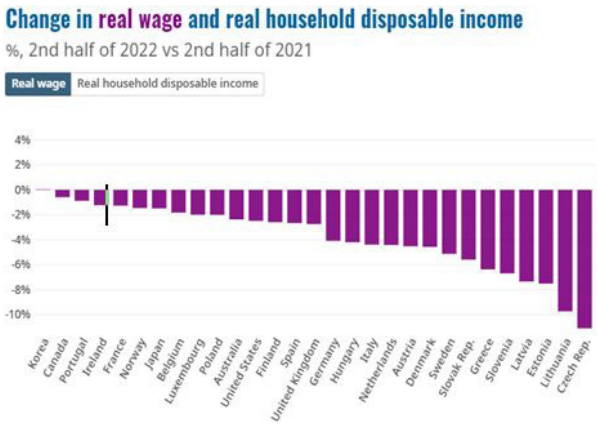
OECD projected headline inflation in 2023 and 2024



Inflation Hit Households Hard

A combination of high inflation and modest wage increases led to falling real wages in 2022. Many governments rolled out extensive support to cushion the effects of high energy and food prices on households. Over the course of 2023, real wages are projected to stop declining in most countries.

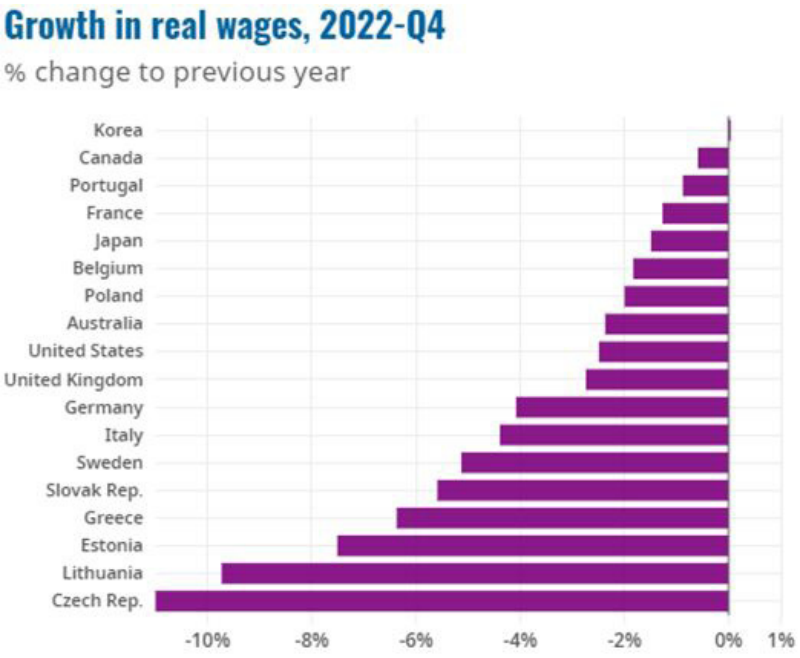
Real wages projected to stop declining in 2023



RESULTS AND DISCUSSION

The global economy is showing signs of improvement but remains fragile. Global GDP growth in 2023 is projected at 2.6%, the lowest annual rate since the global financial crisis, with the exception of the 2020 pandemic period. A modest improvement to 2.9% is foreseen for 2024.

There has been some respite: lower energy prices are helping to bring down headline inflation, and the earlier-than-expected reopening of China has provided a boost to global activity. However, the impact of higher interest rates is increasingly being felt across the economy.



Real wages are defined as compensation per employee deflated by the consumers' expenditure deflator.
Source: OECD (2023), OECD Economic Outlook, Volume 2023 Issue 1.

High inflation and slow wage growth pushed real wages down in 2022, but these are projected to stop declining in most OECD countries over the course of 2023.

With these falls in real wages and a still tight labour market, nominal wage growth is projected to be just over 4% in the overall OECD area in 2023, before moderating to around 3.5% in 2024.

What Should Governments Do?

1. Maintain restrictive monetary policy to combat inflation
   Monetary policy needs to remain restrictive until there are clear signs that underlying inflationary pressures are durably reduced. This may require additional interest rate increases in economies in which high core inflation is proving persistent.
2. Phase out and target fiscal support
   With global food and energy prices having declined and minimum wages and welfare benefits having increased to take account of past inflation, fiscal support to mitigate the cost of living crisis should increasingly become targeted toward vulnerable households inadequately covered by the general social protection system.
3. Prioritise pro-growth spending and supply-boosting structural reforms
   Public debt levels and budget deficits are high. Many also face rising future spending pressures from ageing populations, the green transition and higher interest payments on public debt. These pressing future challenges and the longer-term decline in trend growth rates point to a need for ambitious supply-boosting structural reforms and prioritizing pro-growth public spending.

Still progress is there with an example here: Prior to the colonial rule in India and globally, economy was a vibrant economy. Doubtless the agricultural sector was the main source of livelihood. But there was an all round prosperity across all sectors of the economy. Agriculture was subsistence based, but the cultivators enjoyed the ownership rights and were to pay a reasonable amount of land revenue directly to the king. There were no middlemen, and therefore, no exploitation. Industry was dominated by handicrafts, but it enjoyed world wide reputation of producing quality products like 'Deccai Muslin'. Exports considered largely of finished products. Imports mere largely of bullion (gold and silver). Colonial policies of the British government almost reversed the composition, or structure of output, as well as the composition of exports and imports. Also the pace of growth was severely hit. No systematic official attempts were ever made of estimating per capita income (indicating per head availability of goods and services in the economy). All these practices to uplift business that is reimagination of the business with latest technology. Latest technology have both advantages and disadvantages like a coin but for development of economy in competition to global, some countries follow this coin and some not. That's make difference between developed and developing and under developed economy. All economic indicators play significant role if measured and improved with exclusive mindset experience. Not only one factor play multipurpose upliftment. It will require joining hands with cooperative strategies that can brings green practices in the global economic challenge.

CONCLUSION

To Re-Imaging businesses: New leveraging technology is must. Agricultural and many industries to combat pollution (soil, air, etc.) need green practices necessary to be followed to make this world error free and develop not only economically but healthy also. Artificial intelligence, information technology are latest to make development but it leads unemployment at higher peak that should be balanced.

Digital financial services are faster, more efficient and typically cheaper than traditional financial services and therefore, increasingly reaching lower – income households and small and medium sized enterprises. During the COVID-19 health crisis, digital financial services could enabled contactless and cashless transactions. When digital financial inclusion is advanced, it helped and facilitated the efficient and quick deployment of government support measures, including to people and firms affected by the pandemic. ("International Monetary Fund ").

Fintech companies should strengthen their banking efficiency to supervise the credit standard and to improve the credit assessment procedure, so that beneficiaries can be trusted upon and get advantage by utilizing more and more digital financial services.

Greenery always needs sustainable care and attention to blossom, similarly a business needs new technology to reimagine business or to make progress. Change is the law of nature. Progress needs change and change comes from innovation. Innovation needs rethinking. Rethinking brings new ideas. New ideas brings change. And change positively make development. That's why challenge always persist to generate fruitful results.Globalization has now become the buzzword and the concept of 'global village' has come to being. It is a multi-dimensional phenomenon associated with increasing degrees of openness in most countries. This openness is not confined simply to trade flows and capital flows. It also extends to international flows of technology, information services and to some extent, persons across national boundaries. In other words, it means the acceptance of outward-looking policy of economic development in place of inward-looking one. Due to far-reaching implications of globalization there is equalization of the domestic prices to international prices through the medium of competition. It is primarily removal of national barriers to trade and investment. In a sense it is the extension of the neoclassical view of competition by adopting market-friendly approach. Due to globalization the world has become an increasingly interwoven place. We are living in a period of cataclysmic transformations accompanied by both great optimism and great pessimism. Globalization is not a phenomenon nor just a passing trend. It is a new, overriding, incredibly overpowering and coercively integrating global system. It is sweeping faster and faster and resulting in a revolutionary historical upheaval in human society entailing complex ramifications. Like mythological churning of the ocean, which produced vicious poison as well as nectar, the tidal wave of globalization has convulsed human society with an unprecedented disruption in social, economic and legal order and paradoxical developments which are seen as profoundly ideal and just on the one hand, and wicked and damaging on the other. A Globalization is seen to be very controversial because it

is a process which is taking on social, cultural, environmental, political, and legal dimensions in addition to the predominanfly world economic specter of market economy. The global market economy has triumphed virtually everywhere with cross-border financial transactions, supra-national capitalist order of economic and political power, and a new consumer ideology. (ii) Globalization process is the expansion and intensification of linkages across political and geographical borders, it is characterized by shrinking space, shrinking time, and rapidly disappearing borders. It is a process of accelerated interdependence between peoples of all nations, and also of unprecedented mobility of individuals and peoples, and flows of information, trade and capital in the borderless world. It has acquired considerable force since the 1990's as a result of two leading forces: (i) A new technology that has provided the mechanisms of the information superhighway, the constant accelerating speed of electronic data-transfer through telecommunications and the Internet which have opened up opportunities in a virtual world that have impacts on the real world without interpersonal contact, personally negotiated agreements, or even an idea of one's business partners; and (ii) International trade spurred by companies restructuring and switching production to new plants in other countries, exploiting tax regimes from one country to another in order to maximize profit, and creating an abstract empire of multinational corporations as an instrument of economic and political power itself Globalization is associated with privatization and liberalization. When India's economy has been liberalized and integrated with global economy since mid-1990 through new economic policy, there held to a new thinking on the role of the 'State' when welfare is pre-existing and deeply-rooted constitutional commitment. There is an apprehension that market economy may undermine the very moral and humanistic foundations of our polity set out in Part IV of the Constitution. Is it that mixed economy has given way to market economy? If it is so do they not result in paradigm shift, concepts and pattern changes? It is feared that 'the sovereignty' and socialistic texture of our Constitution are merging as challenges in the process. It is that globalization, WTO and MNCs have made deep inroads into the most cherished domain and constitutional values of Indian sovereignty and socialism. The reservation benefits of the weaker sections of the society suffered a setback with the ongoing privatization and retreat of State from economic sector. Does it not contravene the socio-economic (iii) justice adumbrated in the Constitution? Further, globaUzation is interfering with centre-State relations and the very federal principle. Further, globalization has thrown new challenges to the realization and enjoyment of human rights is no more within the exclusive domain of the State and it has become a matter of international concern. Globalization has benefited developed countries and accentuated inequalities in all the countries of the world. It is anti-poor and pro-rich process. Many countries have experienced negative growth and declining standard of living. Unemployment, joblessness due to shrinking PSEs, flexibility of labour market, contractualization, casualization and displacement have become order of the day. Are these not resulting in infringement of several social security and other labour welfare legislations. Is it compatible with the constitutional philosophy. Globalization has again diluted the underlying spirit of many laws especially The Monopolies and Restrictive

Trde Practices Act, 1969, etc., which are aimed at distributive justice. Indeed it is a revolution of Information Technology and globalization of communication networks crucial for globalization of economic laws. Despite its status as a "master concept" in the world today, globalization has attracted critics with powerful attacks against it. On almost every point, the critics make the opposite case to that of the supporters of globalization. Thus, rather than higher economic growth, the critics see economic stagnation. Rather than economic advance and industrialization, they see deindustrialization. Rather than local entrepreneurship, they see denationalization. Rather than economic stability, they see economic destablization. And rather than the enchancement of human welfare, they see impoverishment and growing inequality. Good or bad, globalization has become a fact of life in our twentyfirst century world. It produces contrasts at every turn: between old and new, Eastern and Western, rich and poor, traditional and progressive, multinational and local. For India, globalization has created turbo-charged growth and a quick rise up the ranks of the world's economic powers. Globalization is a reality which cannot be denied, avoided or ignored with an ostrich-like attitude. However, with all its positive aspects of (iv) accomplishments, it needs to be regulated in view of its multi-dimensional impact on socio-economic system. In Indian context, notions of welfare state, socialistic patterns of mixed economy and egalitarian thrust of constitutional framework cannot be surrendered at the cost of globalization. It is right time that India must realise the gravity of the problem and respond to these challenges with certain corrective measures in order to ensure the creativity, ingenuity and well being of generations to come. Perhaps an ideal solution would be to aim at a perfect harmonization of the global society by bringing various approaches in line with each other. Differences and debates on them however are in any case essential to pave the way for a global society which is based on a binding New Ethic of humanistic principles of genuine respect for human rights and cultural diversity; and of social conditions in which self-realization of the individual as a social being and of equitable development of the people, assured of respect for their distinct identity, have security. Global society calls for global governance and legal order in which due weight is given to developing countries in the decision- making bodies of the new actors viz. the World Trade Organization, the IMF and the World Bank. Specialists in various disciplines should collectively take a balanced and pragmatic view of globalization in the context of socio-cultural reality of our world and its supra-national economic, political, and cultural power which tends to control, direct, and even restructure the entire human society. Countries transitioning to globalization may face short-term problems, like the significant loss of jobs as businesses move out and the lowering of income for some groups of workers as foreign products and services compete with higher-priced local products and services. Some transition countries, like Mexico, Brazil, Argentina, the Republic of Korea, Singapore, Thailand and Malaysia, are becoming slowly integrated with global economic and other standards.(3) They are gaining significant experience in internationalizing their domestic policy-making, in building capacities for dealing with the demands of globalization, in improving their physical infrastructure and in making significant efforts to build institutions and capacities to represent social sectors.

However, most of the developing countries are in the early stage of integration with the world economy and they are seeking ways to attract and retain capital and technology. Many of them are handicapped by involvement in civil war or natural disasters; others are handicapped owing to inadequate physical facilities and limited trained human resources; still others have not made the commitment to understanding their domestic policies and practices in a global context. Whether owing to severe defensive nationalistic commitments or to regional imbalances, those countries cannot design the effective transition to a globalized world. Often beset by young demographics and exposed to global information blowout, some of these Governments face increasing pressure to open up their society by improving and expanding their global contacts.(4) The main element of the role making of the state in the market economy model is the constitutional regulation of the economy, the problem area of economic constitutionality and its attended consequences on the human resource development by ensuring the realization of human rights. The Constitution of India in its present form is not oriented to market economy model, but is modelled on its cherished goals of socialism, justice and equality. A very important component of economic constitutionality is the constitutional settlement of the basic economic and social rights of citizens. These basic rights should be based on guarantee of social security, the improvement of equality of opportunity and the principle of social justice. Among these rights, the following have particular importance: the right to work, the right of free selection of profession and workplace, the right to social security, to leisure, the right to strike, and furthermore the right to establish organizations for representing interests.(5)

REFERENCES

[1] https://www.oecd.org/economic-outlook/june-2023/

[2] https://www.imf.org/en/Publications/WEO/Issues/2023/04/11/world-economic-outlook-april-2023?cid=bl-com-spring2023flagships-WEOEA2023001

[3] Adam B. Zuckerman, Key Components/Processes of Globalization (2003) at page 42. 25.

[4] Richard E. Mendales, Globalization: Internationalization of Trade, Finance and Investment (2002), p. 175.

[5] *Air India Statutory Corporation v. United Labour Union*, AIR 1997 SC 645; M.C. Mehta v State of Tamil Nadu, 1997 SC 699; *Centre of Legal Research v State of Kerala*, AIR 1986 SC 1322.

[6] https://shodhganga.inflibnet.ac.in:8443/jspui/handle/10603/297992

[7] Book: Indian Economic Development (T.R. Jain & V.K. Ohri).

Critical Analysis of Literature Reviews on GST in India and Its Impact of Sustainable Development in Indian Economy

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Abstract

India's biggest tax reform Goods and Services Tax (GST) has been enforced in Bharat from legal holiday, 2017. The launch of GST was proclaimed in could 2017. On June 20, 2017, Arun Jaitley proclaimed that GST are going to be launched on the lines of the night of Independence, on the hour of June thirty. Goods and Services Tax refers to a tax that is inhabitable at every purpose of sale or provision of service, in that at the time of sale of products and services the vendor could claim the input credit of tax which he has paid whereas buying the products. The GST is predicted to alter the full situation of current tax. It is levied in any respect tiers i.e. from production of products and offerings to its very last intake. It is a largest oblique tax reform into the records of taxation device of India. GST affects the life of whole nation. Some takes this chance positively where as many take them as a challenge and oppose it. This study focused on the analysis regarding GST on various perspective. This paper also attempts to analyze the impact of GST on the sustainable development goals in Indian Economy. The paper also examines beyond literature of GST for its important assessment and thereby facilitates in gratifying studies gaps.

Keywords: *GST, Sustainability, Indirect Tax, New Tax*

INTRODUCTION

GST- Goods and Services Tax refers to a tax which is livable at each point of sale or provision of service, in which at the time of sale of goods and services the seller may claim the input credit of tax which he has paid while purchasing the goods. Sustainability in GST deals with contemporizing revenue of government and helps in economic development of a country and eventually leads to attain the status of a developed country.

GST is an improvement over previous taxation system like in previous taxes value addition was covered only up to manufacturing stage not beyond that and, in services only listed services were covered but, in GST value addition of all goods and services (except exempted items) are done beyond manufacturing stage, i.e. retail stage.

Means, GST is a tax on goods and services with comprehensive and continuous chain of set-off benefits from the producer's point and service provider's point up to the retailer's

level. The final consumer will thus bear only the GST charged by the last dealer in the supply chain, with set-off benefits at all the previous stages.

In India there is a 'Dual GST' comprising central and state component charging simultaneously on the common base and the proportion of centre and state will be decided by GST council or Government. This model of Dual GST is taken by India from Canada. There will be one regulating authority namely GST Council.

The GST is expected to change the whole scenario of current Indirect Tax. Both the State and the Central Government will levy GST on almost all goods and services produced in India or imported into the country.

Means, GST is divided into parts like: IGST, CGST, SGST

Where, IGST refers to interstate goods and services tax. It has replaced CST- Centre State Tax. It is not a burden on consumers as it is only use for arrangement of input credits.

CGST refers to central goods and services tax which is collected by central government. It includes taxes which were previously charged by central Government like service tax, excise duty, etc.

SGST refers to State Goods and Services Tax which is collected by state government. It includes taxes which were previously charged by state government like VAT, entertainment tax, etc.

Basically, IGST = CGST + SGST

Direct taxes, such as income tax, corporate tax and capital gains tax will not be affected by GST. It will make Indian's tax structure, elaborate and create a similar market across states.

GST will replace different Indirect Tax levies, i.e. Sales Tax, Service Tax, VAT, Excise Duty, Custom Duty, Countervailing Additional Duty, Special Additional Duty, Securities Transaction Tax, Stamp Duty, Entertainment Tax, Anti-Dumping Duty, Local Body Taxes, Property Tax, Entry Tax, Tax and Duties on electricity, Tax on Goods and Passengers and compliance cost will fall which will lead in getting life simpler. This process will help to increase India's tax-to-gross domestic product ratio.

According to experts GST is regarded to increase economic growth by between 0.9% and 1.7%. Exports are expected to increase economic growth by between 3.2% and 6.3%, were as imports will likely raise 2.4–4.7%. GST is a Value Added Tax (VAT) to be implemented in India, from April 01; 2017. Government has promised that GST will reduce the compliance burdens at present.

GST will help the country to accelerate its economic growth. Also, it has removed the cascading effect of taxes i.e. tax on tax. Also it will greatly help in reducing tax evasion and corruption.

THE SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs), also known as the Global Goals, are a set of 17 interconnected goals that are meant to act as a "common blueprint for peace and prosperity for people and the planet, now and into the future". These Sustainable Development Goals

(SDGs) includes no poverty; zero hunger; good health and wellbeing; quality education; gender equality; clean water and sanitation; affordable and clean energy, etc.

By the implementation of GST, which has unified the nation's 1.2 billion people under a single set of tax laws. GST and Prime Minister Modi's philosophy aims to make India a business-friendly location in order to attract more foreign investment. This could help the SDG 17 aim for partnerships, which was established by the UN.

People would be able to purchase food at reasonable prices as most food items are expected to be tax-free; this might be considered as a step towards lessening India's population's hunger.

The SDG 7: Affordable & Clean Energy may suffer as a result of the GST, which may also negatively affect the SDG 9: Industry, Innovation & Infrastructure; The effectiveness of SDG 8: Decent Work and Economic Growth could suffer if job opportunities are reduced.

OBJECTIVES OF THE STUDY

- To study basic concepts of GST
- To examine various literature reviews on GST in India
- To study the effect through its impact of Sustainable development in Indian Economy

LITERATURE REVIEW

Rao & Chakraborty (2010) in their paper "Goods and Services Tax in India: An Assessment of the Base" stimated the bottom for the planned GST on the idea of conservative assumptions therefore on make realistic estimate of revenue neutral rates across states. The study was supported knowledge of 2007-2008 year for calculations of Revenue Neutral Rate and over that inclusion of electricity duty and rider & product tax into assets doesn't well raise the revenue neutral rate.

R.Vasanthagopal (2011) highlighted in his paper, "GST in India: A Big Leap in the indirect taxation system" that replacement of central excise duty by CENVAT and salestax by VAT was a major reform but, it has various problems and to remove all the problems GST should implement in India.

Various hurdles have to be crossed before implementation of GST but, after that it will be beneficial for the country. The study focused on the impact of GST on various areas and concluded that it would increase the prices of agricultural products, help the manufacturing sector to reduce their cost to the extent of almost 50%. It would also decrease the cost of housing which will be beneficial for the poor. GST has various positive effects but, before its implementation all the problems should be solved.

Jain (2013) studied "An Empirical Analyses on Goods & Service Tax in India: Possible Impacts, Implications and Policies" and Analyzed how the new concept GST proposed by Government can impact various stakeholders, what would be the consequences after its implementation. Tax policies plays an important role on the economy through their impact on both efficiency and equity on the economy. Government decided to implement GST as its implementation would bring down the peak rates of tax and enhance revenue growth.

The study compared the present tax rates with the proposed GST rates and found that it will benefit agriculture, industries, exporters, small traders and the common consumers. But, there were several challenges in transition of present tax regime into any new tax regime. So, proper measures to overcome various issues should be implemented to avoid potential disruptions.

Garg (2014) in his paper "Basic Concepts and Features of Goods and Services Tax in India" analyzed the impact of GST on Indian tax scenario. Also, the study highlighted the possible challenges & benefits of proposed GST. GST is considered as a major tax reform whose main objective is to eliminate cascading of taxes.The study found that implementation of GST will face various challenges like difficulty in deciding threshold limit, its success will depend upon the simplification of GST system. All the sectors of economy like food, cement housing, IT has to bear the impact of GST. Overall conclusion is that GST will improve tax collection & boost India's economic development by breaking tax barriers between states & integrating India through a uniform tax rate.

Sehrawat & Dhanda (2015) studied "GST in India: A Key Tax Reform" and evaluated various advantages and challenges faced by India in execution of GST. Proposed GST is likely to change the whole scenario of current indirect tax system.

The study suggested the features of GST like it is applied to all goods and services except exempted goods and services, the benefits of GST like transparent tax administration, elimination of cascading effects of taxes. Also some challenges faced like high revenue neutral rate, compensation to states in case of loss. The study concluded that in long term implementation of GST would lead to high output, more employment opportunities and flourish GDP by 1-1.5%. as far as challenges are concerned.

Shaik et al. (2015) in their paper "Does Goods and Services Tax(GST) leads to Indian Economic Development?" studied the concept of goods and services tax. the focus of the study was to know impact of GST on Indian economy and its advantages & challenges in Indian scenario. Secondary data collected from various books, journals were used as research methodology. The study found that GDP Growth is expected to go up by 1–2%. The major beneficiary will be manufacturing sector, e.g. FMCG, Cement. Service sector will be adversely affected. In spite of above challenges will definitely knock the doors of India sooner or later.

Mamanshetty (2016) according to this articles, we have taken all the stops to implement GST. If this bill passes quickly. We would be able to roll out from the scheduled deadline. Only if there is a co-operation between central and state. If GST is implemented the consuming state will benefit from the first year itself. Whereas manufacturing states might initially faces losses first 2years. The advantage of GST is that we get India as one single unified market.

Bangergee et al. (2016) reviewed the literature on GST in India with the objective of identifying the research gap in this field for enabling further research and to understand the concept of GST. Researchers used secondary source of data containing journals, research publications and they found various studies like Bovenberg (1992) who used general equilibrium model to assessed different instruments of indirect taxation in middle income countries, Williams(1996) who had studied contemporary indirect tax systems in the world &

compared them with the VAT system in Republic of Fiscalia, Feria (2009) studied the taxation system under indirect tax specifically of financial services in Australia and europeon union, Govind (2011) had discussed the current indirect tax system in India and its drawbacks, the benefits of proposed GST to be introduced in india and many more. The study concluded that implementation of GST would help in better utilization of resources.

Dani (2016) studied, "A Research paper on an impact of Goods and Service Tax(GST) on Indian Economy". After implementation of GST, it will amalgamate central and state taxes into single tax payment, it will enhance the position of India in domestic as well as international market. It will reduce oveall tax burden, will ensure removal of cascading of taxes bu, GST is not as rosy as it is portrayed.

The overall conclusion is that there should be strong IT network and consensus should be reached before implementation of GST regime.

Chaurasia,et.al. (2016) examined the role of goods and services tax in the growth of Indian economy. The study was based upon secondary data which includes newspapers, government reports, magazines, and websites.

The study found that, GST will help to get rid of the system of multiple indirect taxes, it will improve tax compliance. A Unified GST will help the country to compete with multinationals as it simplifies the indirect tax structure to one general rate that can be paid by all companies easily. Also, it helps in getting deduction in taxes already paid i.e. in removing cascading of taxes.

The study concluded that GST is helpful for the development of Indian economy as well as it will be very much useful in improving GDP of country more than 2%.

Devi (2016) in her paper "Goods and Service Tax in India: A SWOT Analysis" described the current indirect tax structure and evaluated the history of tax structure in India mainly tax structure from 16th to 19th century. Study focused on SWOT analysis of GST in Indian context and found various strengths, weakness, threats and opportunities of GST like strength is it will drop the cascading effects of taxes on production and distribution of goods and services, opportunity is that it will help states and centre to collect more revenue, main weakness is that various taxes are not included in GST and main threat is that GST is very fond of technology and India being developing country does not have strong IT structure.

GST is not a guarantee in itself that it would not be affected by political parties. Study concluded that there are numerous weaknesses and threats which can be overcome by focusing on strengths and opportunities.

Kaur et al. (2016) studied in their paper the impact of GST after its implementation, the difference between present indirect taxes and GST. GST is expected to change the whole scenario of current indirect tax. GST is regarded to increase the economic growth between 1.7% and 9%. The study found that before implementation of GST we paid 4–5% tax on package products, readymade garments but, after implementation of GST 18% tax will be paid. So, these products will become costlier, same with the case of jewellery, mobile but, cars, home appliances will become cheaper as their tax rate in GST is less as compared to previous tax rates.

Also, GST will have significant impact on goods and services. It will greatly affect common man but rich people would not be affected. implementation of GST is not an easy task. Various challenges have to be faced during implementation like disputes between centre and state, requirement of highly sophisticated IT network.

The overall conclusion is that GST will play a dynamic role in growth and development of country.

Gupta et al. (2017) had compared GST in India with GST of other countries in their paper "Good and Service Tax: An International Comparative Analysis". In India Dual GST system is proposed where both centre and state will levy GST across the value chain. The study found that there is no any ideal GST in India which can subsume all indirect taxes. Central sales tax will be continued but with different form IGST, various items are exempted from GST like petrol, liquor, diesel, if these will not be included in GST then objective of GST will be defeated. Also there is a lot of difference in GST rate of India with other countries like in Australia GST rate is 10%, in France 19.6%, in Canada and Japan 5%, in Singapore 7%, in India there are 5 rates. And tax rate is higher than other countries. The study conclude that its implementation stands for a coherent tax system which will colligate most of current indirect taxes and in long term it will lead to higher output, more employment opportunities and flourish GDP by 1–1.5%. No doubt that GST will give India a world class tax system by grabbing different treatment to manufacturing and service sector. But all this will be subject to its rational design and timely implementation.

Lourdunathan & X. (2017) in their paper "A Study on implementation of goods and services tax(GST) in India: prospectus & challenges" studied the prospectus & challenges of implementation of GST in India and the opinions among various sectors like manufacturers, traders and society about GST. The study was exploratory research and data was collected from journals, annual reports, newspapers and magazines i.e. secondary data was extensively analyzed for the study.

The study found challenges like demonetization effect, implementation in unorganized sector and various prospects like beneficiary sectors would be FMCG, consumer durables, etc., overall conclusion was that GST provide relief to producers and consumers by providing various benefits but, implementation of GST requires Government to educate, conduct training, continuous seminars & workshops on GST so as to create awareness among society about GST.

Priya (2017) examined in paper "GST – A Game Changer" implications of GST on Tax Structure, Tax incidence & Tax payment. The study found that GST removed the complexities of present Tax structure and removed the cascading effect & inability to set off between VAT and CST and GST Council fixed 4 tier structure for goods ranged 0–28% with two standard rates of 12% & 18%.

GST will increase the charges of telecommunications and banks and it will reduce the tax rate of automobile sector and real estate.

Also, in GST regime for intra state supply central GST and state GST will be paid and for inter state supply integrated GST will be paid.

The study concluded that transition from multiple tax regime to unified tax regime will definitely create problems but, it can be handle if consensus is reached between state and centre.

R. Rupa (2017) overviewed the concept of GST, its merits & challenges in her paper "GST in India: An Overview". In present tax regime, there are separate laws to levy various indirect taxes and GST will subsume all the laws and only one GST law will be implemented. The study found that there are 3 models of GST namely, Central GST, State GST and Dual GST. India will implement dual GST. Also manufacturing states like Maharashtra, Haryana, Punjab are unhappy with GST as it will lead to revenue loss. So it is decided, to compensate the states for revenue loss up to 5 years, i.e. 100% of loss in 3 years, 75% in 4th year & 50% in 5th year. Also study found various advantages & challenges of GST like it will help to remove double taxation, cascading of taxes, due to this various disputes on tax matters will be eliminated but, as there will be dual control in India every business compliance cost will increase, on some products cost will increase. The study conclude that for proper implementation it is mandatory to have proper IT network & infrastructure.

Sachin abda (2017) highlighted in his paper "The Concept and Benefits of GST and its impact on various stakeholders like consumers, producers, government". GST is amalgamation of various indirect taxes. The study found that it is beneficial for various parties. It will help in reduction of corruption and cascading of taxes. Benefit is dependent on goods and services consumed/availed by them. The overall conclusion is that GST will help the country in the development of economy.

CONCLUSION

From the study it's been concluded that GST is a complete oblique tax reform and it's going to offer alleviation to the manufacturers and consumers. The take a look at of literature suggests that it's going to assist the financial system in reaching financial increase and could make the complete country a unified market.

Other countries expertise in GST has tested to be Associate in nursing economical assembling system. Of course, the transition from multiple tax regime to unified tax regime can cause some growth issues like sharing of the revenue between centre and also the state, lack of availableness of uninterrupted web access within the far off, the amount at intervals that the traders can get refund of tax because it could be a crucial consider their capital management. These issues may be tackled if agreement exists among the states and also the numerous stakeholders to implement the system. GST has the potential to spice up GDP, broaden assets and attract foreign investment and pave thanks to thanks to thanks to ultimately making ample of job opportunities.

REFERENCES

[1] Vasanthagopal, R. (2011). GST in India: A Big Leap in the Indirect Taxation System. International *Journal of Trade, Economics and Finance*, 2(2), 144.

[2] Rao, R.K., & Chakraborty, P. (2010). Goods and Services Tax in India: An Assessment of the Base. *Economic and Political Weekly*, 45(1), 49–54. http://www.jstor.org/stable/25663968

[3] Jain, A.(January,2013).An empirical analysis on goods and services tax in india: Possible impacts, implications & policies. *International journal of reviews, surveys and research*, 2(1).

[4] Sehrawat, M., & Dhanda, U. (2015). GST in India: A key tax reform. *International Journal of Research-Granthaalayah*, 3(12), 133-141.

[5] Dani, S. (2016). A Research Paper on an Impact of Goods and Service Tax (GST) on Indian Economy. *Bus Eco J*, 7, 264.

[6] Devi, S. (December, 2016). Goods and services tax in India: A SWOT Analysis. *International Journal of Research – Granthaalaayah*, 4(12), 188–195.

[7] Banergee et al. (2016). A critiacal review of literature on goods and services tax in India. *Imperial Journal of Interdisciplinary Research*, 2(11), 1627–1634.

[8] Chaurasia, P., Singh, S., & Sen, P.K. (2016). Role of Good and Service Tax in the Growth of Indian economy. *International Journal of Science Technology and Management*, 5(2), 152–157.

[9] Mamanshetty, S.V. (2016). Good and Service Tax in India: An Over View. *International Journal of Research in Economics and Social Sciences*, 6(12), 115–125.

[10] Shaik, S., & Firoz, S. (2015). Does Goods and Services Tax (GST) Leads to Indian Economic Development? *IOSR Journal of Business and Management*, Ver. III, 17(12), 2319–7668. https://doi.org/10.9790/487X-171230105

[11] Kaur, N., Singh, Ajitpal, Singh, Z., Gupta, M., Kaur, J. & Goyal, Parmod (2016). Original scientific paper (Kaur et al.) 161–167.

[12] Agarwal, D.M.K. (2017). People's Perception About GST: An Empirical Study.

[13] Lourdunathan, F., & Xavier, P. (2017). A study on implementation of goods and services tax (GST) in India: Prospectus & Challenges. *International Journal of Applied Research*, 3(1), 626–629

[14] Priya, B.M. (2017). GST – A Game Changer. *International Journal of Management Research and Social Science*, 4(1), 10–12.

[15] Paramashivaiah, P., & Suresh, B.K. (2017) GST in India: A Study on Benefits and Challenges. *Introducing GST and Its Impact on Indian Economy*, 76.

[16] Saravanan, S., & Chandra Mohan, K. (2017). Assessment and Impact of Existing Indirect Tax to Goods and Service Tax in India.

[17] Sachin Abda (2017). Research paper on Effects of Goods and Services Tax on Indian Economy. *International Education and Research Journal* (*IERJ*), 3(5).

[18] Garg, G. (2014). Basic Concepts and Features of Good and Service Tax in India. *International Journal of Scientific Research and Management* (*IJSRM*), 2(2), 542–549.

[19] Gupta, S., Kumar Singh, M., & Kumawat, C.H. (2017). Good and Service Tax: An International Comparative Analysis. *International Journal of Research in Finance and Marketing*, 7(5), 164–173.

[20] Sunitha, G., & Sathischandra, P. (2017). Goods and Services Tax (GST): As a new path in tax reforms in Indian economy. *International Journal of Research in Finance and Marketing*, 7(3), 55–66.

[21] Rupa, R. (2017). GST in India An Overview. *International Education & Research Journal*, 3, 88–89.

A Financial Econometric Perspective of Impact of Interest Rate on Indian Stock Market Indices

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Abstract

This study examines the effect of interest rates (10-year T-bill rate) on the Indian stock market index. The time frame of this study is from 2013 to 2022.The underlying series is examined using the Augmented Dickey-Fuller unit root test and found to be non-stationary at the level but stationary in the first difference. Bidirectional connections are shown via the Granger causality test. Interest rates and stock market indices, such as the nifty 50 and midcap, have a bidirectional causal relationship. Consequently, it is now possible to predict stock price changes based on changes in interest rates, which can help with economic forecasting, planning, and growth. The main finding of this study is that interest rate effects must be taken into consideration while analysing the dynamics of Indian stock market behaviour. Consequently, we urge the adoption of appropriate macroeconomic policies that are favorable towards stock market index (proxy for stock prices) and this in turn will stimulate the growth of the stock market in India.

Keywords: *Stock Market Index, Interest rate, Granger Causality Test*
JEL Code Classification: *G0, E43, C58*

INTRODUCTION

India is a country which is developing at a faster pace as compared to other developing countries. The reasons associated with this are many such as development in real estate market, growth in number of MNC's, Foreign investments, better utilization of resources, development of stock exchanges, capital market reforms, reforms in banking sector, development of MSME's, improved political interferences, etc. All the reasons likely helped in some or the other way in development of economy as a whole. The idea behind the entire development process is to improve the quality of life and well-being of the individuals, generation of employment opportunities,better standard of living, growth in GDP (Gross Domestic Product), improved balance of payments, increase in per capita income and many more. One among the most prominent factor that affects stock prices is the earning that is expected by investing in stock and this is directly influenced by the interest rate. Every company for its ongoing business activities is dependent on some kind of borrowing in its balance sheet. One among the sources of company's finances is commercial banks. If the repo rate moves upward, it is likely that bank will raises its interest rate. This will increase borrowing rate for companies. This rising

rates cause's reduction in Net profits which is directly reflected in its stock prices and returns associated. Likewise, when this interest rate is linked with equities they have a unidirectional relationship. When interest rate goes up the return on equities increases and when interest rate falls the returns on equity investment declines. Thus the relation between stock market operations and interest rate are interconnected and influence each other activities.Thus thus research paper studies the influence of interest rate on Indian stock market.

REVIEW OF LITERATURE

Empirical Literature

Asai & Shiba (1995) studied the relationship between stock market and macro-economic variables in Japan. For the purpose of study vector auto regressions (VAR) model was used. The data was time series in nature and the variables used as macro-economic variables were inflation rate, interest rate, industrial production index and stock market. The results explained that there exist a positive relationship among macro-economic variables and stock market returns. Thus macro-economic factors boost the stock market of Japan. While the effect of stock market on economic growth was found to be inconclusive.Levine and Zervos (1996) worked on the relationship of stock market development with economic growth. The selected macro-economic variables are consumer price index, the money supply and the Treasury bill rate. The results disclosed strong positive correlation between the stock market development, the long-run stock market index and the selected economic variables. The Vector Error Correction Model was used for analysis. It was clearly seen from the analysis that stock market was significantly influenced by macroeconomic variables. Likely, short run and long run relationships between interest rate, inflation rate, exchange rate, and the industrial productivity of Kuala Lumpur Stock Exchange (KLSE) Composite Index was examined by Islam (2003). The results found both short as well as long run relation between all the selected macro economic indicators (interest rate, inflation rate, exchange rate, and the industrial productivity) and the stock returns. Mayasmi et al. (2004) analyzed the link between macro-economic variables with Singapore's composite stock index, SES All-S Equities Hotel Index, and SES All-S Equities Finance Index, as well as SES All-S Equities Property Index. He applied Johansen's cointegration VECM. The monthly data was from January 1989 to December 2001. The selected macro-economic variables were interest rate, inflation, exchange rate, industrial production and money supply. The results showed Singapore stock market and the SES All-S Equities Property Index are associated with selected macroeconomic variables. On the other hand SES All-S Equities Hotel Index and the SES All-S Equities Finance Index showed close relationship with few macro economic variables. Esen et al. (2005) studied the effects of macro economic variables dynamics. The study was related to Turkish stock market. The GARCH model was used with macroeconomics variables namely foreign exchange rate, industrial production, money supply, industrial production, and interest rate. The data was weekly between 1991 to 2000. The results were that the financial slowdown in 1994 and subsequent recovery helped the structural changes in the dynamics. Gan et al. (2006) studied

New Zealand stock market and macro-economic factors using cointegration and Granger causality test for the data set from January 1990 to January 2003. The results said that stock market index was not a significant indicator for macro-economic growth. Ologunde, Elumilade and Asaolu (2006) examined Nigerian market; he studied the relationship interest rate and stock market capitalization rate. Their findings said that the prevailing interest rate is influenced positively with the stock market capitalization rate. Thus interest arte and stock market return are closely associated with each other. Similarly, Abugri (2006) analysed macro economic indicators and stock market returns in Latin American countries. The selected macro economic indicators were exchange rates, interest rates, industrial production and money supply. The results drawn showed that macro-economic factors are impacting significantly towards prices of stocks of selected Latin American countries.Chuang et al. (2007) examined the impact of macro-economic fundamentals on stock prices in Taiwan, Hong Kong, Singapore and South Korea. The selected macro-economic variables were money supply and budget deficit. The study revealed long run relation between selected variables and stock prices of four countries. Padhan (2007) conducted research to investigate the relationship between Indian stock market and real economic activities. The Cointegration and causality model was used for the period of 1991 to 2005. The study results were that there exist a long run relation among the two and that causality exist between real economic activities and Indian stock market. Ahmed (2008) explored causal relationship between selected key macro-economic variables and Indian stock market prices. For Indian stock market both Nifty and Sensex were taken as proxy to dependent variable. The selected key macro-economic variables were Index for Industrial production, Foreign direct investments, exports, money supply, exchange rate, interest rate. Granger causality, BVAR modeling and impulse response function were applied to find empirical results.The study showed that from among all the selected macro-economic variables only interest rate was influencing stock market prices in India. Kyereboah-Coleman & Agyire-Tettey (2008) studies relation between macro-economic variables and stock market in Ghana. The data collected was quarterly for the period 1991 to 2005. All the share indexes represented stock market performance while selected macro-economic variables were inflation, Treasury bill rate, real exchange rate and interest rate. The results showed positive relation between exchange rate and stock market performance while lending rate and inflation have negative relation with that of stock market. Unlikely to above, Inflation and exchange rates have a negative but insignificant relationship to stock market returns in Ghana. Rahman et al. (2009) explained the relationship betwwen stock prices in malaysia and macro economic varaibles. The montly data was collcted from January 1998 to March 2008. The model used was VAR. The macro economic variables used for study were interest rate, money supply, reserves, industrial production index and exchange rate. The findings were that there is a cointegrating relation between these variables and stock market. It was seen that industrial production index, interest rates, and reserves were positively related while money supply and exchange rate are negatively related. Chinzara (2010) studied macro-economic variables and stock market volatility with the use of Vector auto regression and GARCH framework for Nigerian

stock market. The results showed Exchange rate and short term interest rate plays crucial role in influencing volatility in stock market while inflation, gold and oil prices are insignificant in affecting volatility in Nigerian stock market. Xiufang Wang (2010) analyzed the time series relationship between macro-economic variables volatility and stock market volatility in China. The lag-augmented VAR (LA-VAR) models and exponential generalized autoregressive conditional heteroskedasticity (EGARCH) were used .It was seen that bilateral relation exist between inflation and china stock market while for interest rate unidirectional relationship was found with china stock market. But real GDP's relation with stock prices was seen insignificant. Adaramola (2011) examined the effect of macro-economic factors on the Nigerian stock prices. Ordinary least square technique was used for the quarterly data from 1985 to 2009. The selected macro-economic indicators were interest rate, exchange rate, broad money, inflation, oil prices and gross domestic product. The results disclosed the fact that among all the selected macro-economic variables only inflation and money supply do not have significant impact on Nigerian stock market. Oseni, et al. (2011) examined the volatility of stock market and macro-economic variables in Nigeria by using EGARCH (exponential generalized autoregressive conditional heteroskedasticity) model and lag-augmented VAR (LA-VAR) models. The data for the study was from 1986 to 2010. The macro economic variables were real gross domestic product, consumer price index, the inflation rate, short-term interest rate. As per the findings bi-causal relationship was found between stock market volatility and real gross domestic product. On the other hand causal relationship was found between volatility of stock market and volatility of interest rate and exchange rate.Srinivasan (2011) conducted research to find out long term relationship between share price and macro-economic variables in India. For share price NSE-Nifty share price Index was taken and the selected macro-economic variables were index of industrial production, consumer price index, interest rate, money supply, exchange rate, and the US stock price index. Both long run and short run relationship among share price and macro-economic variables were studied. Johansen and Juselius (1990) multivariate cointegration technique was applied to determine the long-run relationships and VECM (Vector Error Correction Model) was used to analyze the short run causality between the share price and macro economic variables. The findings were that positively significant long term relation was found between money supply, interest rate, index of industrial production, and the US stock market index but significant negative correlation was found between share price and exchange rate in India. It was also seen strong unidirectional causal between interest rate and stock market return and the US stock market return to NSE stock market return.Short run casuality relationship was found money supply and interest rate, inflation, and money supply, and the US stock market and exchange rate. Khan et al. (2011) used vector autoregressive (VAR) model to study stock returns and macro-economic variables. The data for the study was from June 2004 to December 2009. The macroeconomic variables for the study were money supply, exchange rate, inflation, Treasury bill rate and interest rate. All these are independent variables and the dependent variable was stock market returns. The analyses revealed that only money supply have significant impact

on stock returns from among all the selected variables.Khan et al. (2012) also conducted his study on macroeconomic variable and its effect on Pakistan stock exchange for the period 2001 to 2010. The variables selected for the study were exchange rate, inflation and interest rate. The methodology used for analysis was multi linear regression, results of the study revealed that exchange rate have significant impact on stock market returns while the other two variables, i.e. interest rate and inflation have insignificant impact on the returns of stock market.Osisanwa and Atanda (2012) investigated the determinants of stock market in Nigeria. He employed OLS technique by using annual data from 1984 to 2010. The macro economic variables for study were consumer price index, exchange rate, broad money, interest rate and real per capital income. The results were that exchange rate, interest rate, money supply and previous stock return levels are the primary determinants of stock returns in Nigeria.Hussain, et al. (2012) studied impact of macro-economic variables on stock prices. Augmented dickey-fuller (ADF) and Kwiatkowski-Phillips-shin (KPSS) unit root test, Johanson co-integration test, vector correction model (VECM) and Granger causality test were employed to draw results for the analyses. The period of study was from January 2001 to December 2010. The selected macro-economic variables were exchange rate, foreign exchange reserve, industrial production index, interest rate, import, money supply, wholesale price index and export. As per the results Foreign exchange rate, interest rate, money supply, and wholesale price index showed a positive and significant relation between stock prices. But import and export showed negative relation. As per the results of Granger causality wholesale price index and money supply have bi-directional relation and foreign exchange rate, export rate and money supply have unidirectional relation with stock prices. But interest rate, industrial production rate and import do not have any causal relation with stock prices. Zakaria et al. (2012) studied the relation between macro-economic variable volatilities and stock market volatility in Malaysia. The selected macro-economic variables were inflation, gross domestic product, money supply, exchange rate, interest rate. The monthly data collected was from January 2000 to June 2012. The methodology used was GARCH (generalized autoregressive conditional hetero-skedasticity) and VAR (vector autoregressive) model. The results showed very little support towards the macro economic factors volatility and stock market volatility. Regression analysis was also conducted and the results were that only money supply volatility is significantly correlated to stock market volatility from among all the selected macro-economic variables. Attari and Safdar (2013) studied the relation between economic factors and stock market. Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH)model was employed. The macroeconomic indicators were gross domestic product, inflation, and interest rate and the data collected was from December 1991 to August 2012.the results found reveled that all the selected macroeconomic indicators have significant effect on the stock market prices and stock market is one prominent indicator of growth of economy.Naik (2013) examined the macro economic variables and stock market returns behavior in India. The chosen macro-economic variables were industrial production index, inflation, money supply, exchange rate and short-term interest rates. The period of study was from 1994 to 2011 and the data was collected quarterly. The methodology used was Vector error correction model

and Johansen cointegration to study long term relation between selected macro-economic indicators and stock market. The results discovered long run association between macro-economic variables and stock market. It was found that positive long run relation existed between money supply and industrial production index and negative relation between stock return and inflation. But interest rate and exchange rate results found to be insignificant. Abdullah et al. (2014) investigated the causality between macro-economic variables and stock market index in Malaysia. He adopted time series techniques and Wavelet analysis. The variables were Kuala Lumpur Composite Index consumer price index, exchange rate, short-term interest rate, export and government bond yield. Data was collected for the period January 1996 to September 2013. The results were that among all the variables short term interest is having maximum casual relation with Malaysian stock market and it was also seen that government bond, short-term interest rate and KLC are exogenous variables.Hunjra, et al. (2014) used cointegration and Granger Causality to find the effect of macro-economic indicators on Pakistan stock price. Macro-economic indicators that are selected are exchange rate, inflation rate, Gross domestic product and interest rate. Monthly data from 1st January, 2001 to 31st December, 2011 was collected. The result of analysis was that in the short run there is no relation between Pakistan stock market. But in long run it is found strong relation between stock market returns in Pakistan and chosen macro-economic variables.Ibrahim and Musah (2014) studied macro-economic variables impact on stock market in Ghana.The selected macro-economic variables were exchange rate, inflation, broad money supply, index of industrial production and interest rate. Vector error correction model and the Johansen multivariate cointegration approach was applied. The monthly data was collected for the period from September, 2000 to September, 2010. The results found that long run relation exist between stock market returns and macro-economic fundamentals selected. The results also revealed that inflation and money supply have significant positive relation while interest rate, exchange rate and industrial production have negative relation with Stock returns in Ghana. Ilahi et al. (2015) conducted research on the inter connection between macroeconomic variables on stock market returns in Pakistan. The macro economic variables were inflation rate, exchange rate and interest rate. The Pakistan Karachi stock exchange 100 index was selected as representative of the stock market returns. Data was collected from January 2007 to December 2012. The methodology applied for data analysis was Multiple Linear Regression. The results of the study were that there is weak connection between selected macroeconomic variables and stock market returns in Pakistan.

DATA AND METHODOLOGY

Objective and Hypothesis

The objective of the research conducted is to study the relationship between interest rate (10-year T-bill rate) and its impact on Indian stock market indices including nifty 50 and midcap. The null hypothesis of the research study is that there exist no significant relationship between interest rate (10-year T-bill rate) and Indian stock market.

Data Description, Sources and Estimation

The study makes use of monthly time series data in order to analyse the long-term behaviour of interest rate movements and stock indices of India. The interest rate of 10-year T-bills is considered in the study. The fluctuations in the interest rates have a significant impact on the economy especially on the demand of loans, consumer products, real estate etc. The monthly data of interest rate of 10-year T-bills and the stock indices are collected from Bloomberg software for the period 2013 to 2022.

In attempting to establish the relationship between Interest rates and stock market index in Indian Stock Market, the study employed descriptive statistics and econometric techniques such as; VAR(Vector auto regression) model and Grangers causality test., this enables us to understand and establish a directional relationship, i.e. unidirectional or bidirectional relationship exist between the Interest rate and stock market index or not.

DATA ANALYSIS AND INTERPRETATION

Descriptive Statistics

In descriptive analysis the average price, maximum and minimum price, standard deviation. skewness, kurtosis and the density population is observed. The results of the descriptive analysis are shown in the Table 1.

Table 1: Descriptive Analysis: 10-Year T-Bills Interest Rates

	10-year T Bills interest rates
Mean	7.719120
Median	7.786000
Maximum	9.319000
Minimum	5.262000
Std. Dev.	0.673173
Skewness	-0.522088
Kurtosis	3.478278
Jarque-Bera	9.178421
Probability	0.010161
Sum	1289.093
Observations	167

The results of descriptive analysis indicate that the average 10 years T-bill rate during the selected period is 7.72%. The minimum rate was found to be 5.26% and maximum it went to 9.32%. During the selected period from 2013 up to 2022 the 10-year T Bills rate moved in the narrow range of 7.71 and 9.31%. The skewness of the distribution is found to be very low but negative and kurtosis is highly leptokurtic. The Jarque-Bera test is applied to check the normal distribution of 10-year T-bill rates. The probability value of Jarque Bera statistics for the 10-year T Bill series is found to be less than five percent level of significance. Thus the time series of 10-year T bills rate is not normally distributed.

Unit Root Test

The paper employed the Augmented Dickey Fuller (ADF) unit root test to determine whether the series are stationary or not. The results before transformation showed that the p-value of the ADF statistic is found to be greater than 0.05(significance level 5%). Hence it can be concluded that the ten-year T-bill rate series is random walk and contains the unit root. Since the series is found to be non-stationary it was transformed into a stationary series. The results of the transformed series is shown in Table 2.

Table 2: Unit Root Test

Null Hypothesis: 10 Year T-Bills Interest growth rate has a unit root Exogenous: Constant Lag Length: 3 (Automatic – based on SIC, maxlag =13)			
		t-Statistic	*Prob.**
Augmented Dickey-Fuller test statistic		–8.161	0.000
Test critical values:	1% level	–3.471719	
	5% level	–2.879610	
	10% level	–2.576484	
*MacKinnon (1996) one-sided p-values.			

The results of Table 2 of ADF unit root test on the log differenced transformed series of interest rate indicate that the probability value of ADF statistic is found less than 0.05. Hence it can be concluded that the log difference transformation applied on Interest rate makes the series stationary. Here the transformed series which is also known as return on interest rate can be further used in econometric analysis.

Correlation between Interest Rate Fluctuations and Indian Stock Indices

The correlation between the interest rate fluctuations and Indian stock indices (Nifty 50 returns and Nifty Midcap 100 returns) is estimated in the study. The null hypothesis assumes that there exists no significant correlation between the interest rate fluctuations and Nifty 50 returns and Nifty Midcap 100 returns. The Pearson correlation is estimated in the study. The result of correlation analysis is shown below:

Table 3: Covariance and Correlation Analysis

Covariance	*Nifty Midcap 100 Return*	*Nifty 50 Return*	*10-year T-Bills Interest Rates*
Nifty Midcap 100 return	1.000000		
Nifty 50 return	0.853368	1.000000	
10 – year T Bills interest rates	-0.095865	-0.095771	1.000000

Causality Analysis: Selection of the Optimum Lag

The Table 4 indicates the results of VAR Lag Order Selection Criteria in order to select the optimum lag for the analysis.

Table 4: VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria Endogenous variables: RET_NIFTY RET_NIFTYMIDCAP RET_TENYEAR						
Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	728.5024	NA	1.18e–08	–9.738288	–9.677805*	–9.713715
1	744.1066	30.37050	1.08e–08	–9.826934	–9.585005	–9.728642
2	758.2011	26.86482	1.01e–08	–9.895317	–9.471942	–9.723307
3	775.6911	32.63235	9.03e–09	–10.00928	–9.404456	–9.763548*
4	788.2340	22.89699	8.62e–09	–10.05683	–9.270564	–9.737384
5	794.3541	10.92578	8.97e–09	–10.01818	–9.050461	–9.625009
6	813.3674	33.17764*	7.86e–09*	–10.15258	–9.003422	–9.685698
7	822.5350	15.62806	7.86e–09	–10.15483*	–8.824226	–9.614229
8	827.8514	8.848748	8.28e–09	–10.10539	–8.593335	–9.491066

* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

The optimum lag decided in the study is three as suggested by HQ criteria in the study. Hence in the research study the multivariate causality is analysed considering lag 3 for the further analysis. In the VAR methodology the pair wise Granger's causality test provides the causal relation between the two variables at a time, whereas the VAR model can consider many variables at a time. If one variable "Granger causes" other variable the coefficients of the lagged values of the former must be significant in VAR.

Causality Relationship between the Ten-Year Treasury Interest Rates and the Indian Stock Market Indices

The lead lag relationship between the log difference transformed ten-year treasury interest rates series and Nifty 50 returns and Nifty Midcap 100 returns is analysed using Grangers causality test. The grangers causality test assumes the null hypothesis that there exists no significant lead lag relationship between the ten-year treasury interest rates series and Nifty 50 returns and Nifty Midcap 100 returns. The result of Grangers causality test is shown below:

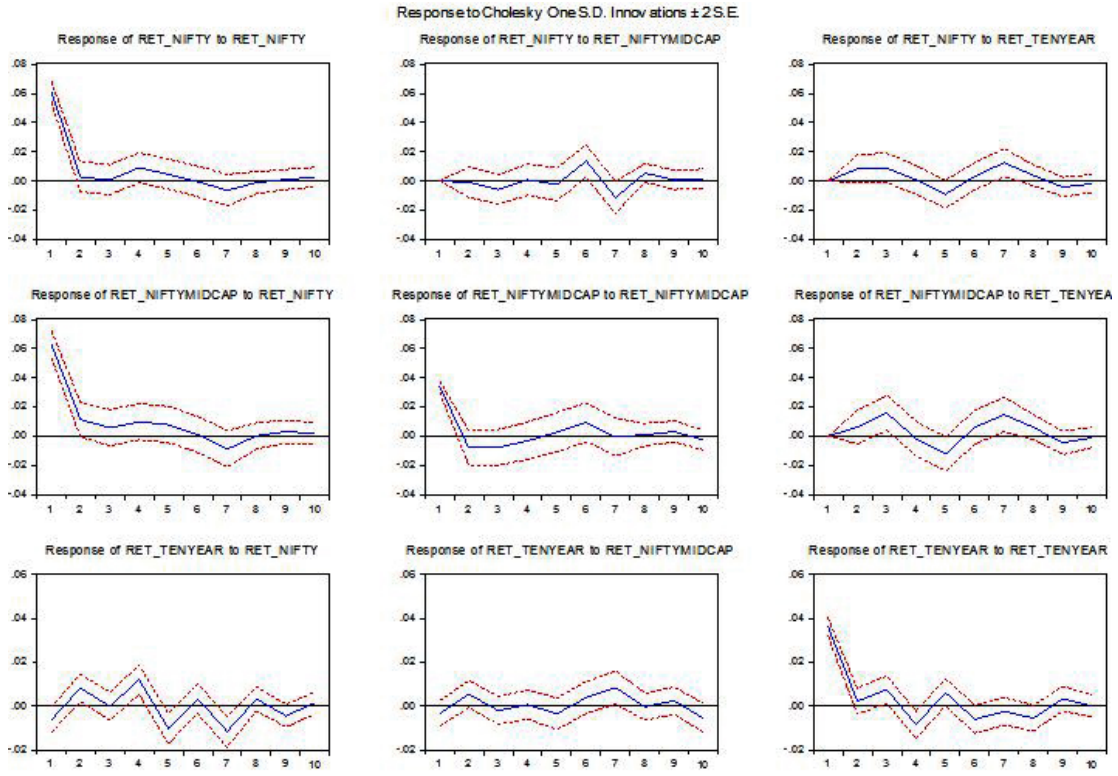
Table 5: Pairwise Granger Causality Tests

Null Hypothesis	*Obs*	*F-Statistic*	*Prob.*
NIFTY Midcap return does not Granger Cause NIFTY return	161	1.71646	0.1209
NIFTY return does not Granger Cause NIFTY Midcap return		1.16985	0.3255
Interest rate does not Granger Cause NIFTY return	153	2.62283	0.0193
NIFTY return does not Granger Cause Interest rate		4.69644	0.0002
Interest rate does not Granger Cause NIFTY Midcap return	153	3.06902	0.0075
NIFTY Midcap return does not Granger Cause Interest rate		4.04426	0.0009

The results indicate that the p-value of F statistics is found to be less than five percent level of significance between the ten-year treasury interest rates series and both of the Indian stock indices. Hence with nifty five percent confidence level the null hypothesis of no significant causality relationship between the ten-year treasury interest rates series and Indian stock indices cannot be rejected. Therefore, it can be concluded that there exists significant lead lag relationship between ten-year treasury interest rates series and both of the Indian stock indices namely Nifty 50 returns and Nifty Midcap 100 returns. There seems to exists bidirectional causality between the interest rates and the stock market. This can be concluded that movements of interest rates in India have a significant impact on stock market movements.

Impulse Response Analyses

The impulse response analyses the responsiveness of the endogenous variable in the VAR to shocks to each of the exogenous variables. Thus, for each endogenous variable in the system, a unit shock is applied to the error, and the effects upon the VAR system over time are noted. In the study the interest rate, nifty 50 and nifty midcap series are considered as endogenous variables. The impulse response graphs of the causality analysis is shown below:



The above figure indicates significant impact of interest rates on the stock market indices are observed. Bidirectional causality between the interest rate and nifty stock indices is observed in the study.

DISCUSSION AND CONCLUSION

Macroeconomic factor plays a very significant role in the stock market movement.It was found that the relationship between interest rate (10-year T-bill rate) and its impact on Indian stock market indices including nifty 50 and midcap for descriptive analysis indicated that the fluctuations in the interest rates have a significant impact on the economy especially on the demand of loans, consumer products, real estate etc. The results between interest rate (10-year T-bill rate) and its impact on Indian stock market indices including nifty 50 and midcap in case of descriptive statistics explained that long term behavior of interest rate significantly influence Nifty 50 and Nifty 100 midcap index. The Pearson Correlation between interest rate fluctuations and Indian stock concluded found that negative correlation exists between the crude oil with both the indicators of the Indian stock market, i.e. Nifty 50 and Nifty 100 midcap index. The correlation between the interest rate fluctuations and Indian stock indices (Nifty 50 returns and Nifty Midcap 100 returns) found to have negative correlation.It can be concluded that there exists significant lead lag relationship between ten-year treasury interest rates series and both of the Indian stock indices namely Nifty 50 returns and Nifty Midcap 100 returns. There seems to exists bidirectional causality between the interest rates and the stock market. So it can be concluded that movements of interest rates in India have a significant impact on stock market movements. The impulse response test found that significant impact of interest rates on the stock market indices are observed. Bidirectional causality between the interest rate and nifty stock indices was observed in the study.

It can be concluded that the selected macro-economic variable namely interest rate impact the Indian stock market indices Nifty 50 and Nifty midcap. We therefore recommend the adoption of appropriate macroeconomic policies related to interest rate that are favorable to stock market index (proxy for stock prices) and this in turn will stimulate the growth of the stock market in India. Thus, Indian stock market and macroeconomic variables are closely related to each other and thus economist, financial analysts and traders while making decisions related to Indian stock market must appropraitely examine macro-economic variables and its influence on Indian stock market.

REFERENCES

[1] Abdullah, A.M., Saiti, B., & Masih, A.M.M. (2014). Causality between Stock Market Index and Macroeconomic Variables: A Case Study for Malaysia. *Munich Personal RePEc Archive Paper No. 56987*. Online at http://mpra.ub.uni-muenchen.de/56987/

[2] Abugri B.A. (2006). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets. *International Review of Financial Analysi*, 19, 228–245.

[3] Adam A.M. & G. Tweneboah (2008). Do macroeconomic variables play any role in the stock market movement in Ghana?. *MPRA Working Paper No. 9368*.

[4] Adaramola, A.O. (2011). The Impact of Macroeconomic Indicators on Stock Prices in Nigeria. *Developing Country Studies*, 1(2), 1–14.

[5] Ahmed (2008). Aggregate economic variables and stock markets in India. *International Research Journal of Finance and Economics* (14), 141–164.

[6] Asai, M. and Shiba, T. (1995) 'The Japanese stock market and the macroeconomy: An empirical investigation', *Financial Engineering and the Japanese Market*, Vol. 2 pp 259-267.

[7] Attari, M.I.J., Safdar, L., & Student, M.B.A. (2013). The Relationship between Macroeconomic Volatility and the Stock Market Volatility: Empirical Evidence from Pakistan. *Pakistan Journal of Commerce and Social Sciences*, 7(2), 309–320.

[8] Chinzara, Z. (2010). Macroeconomic uncertainty and emerging market stock market volatility: The case for South Africa. *Economic Research Southern Africa*.

[9] Chuang, S., & Yen, H. (2007). The impact of a product's country-of-origin on compromise and attraction effects. *Marketing Letters*, 18, 279–291.

[10] Esen Erdogan and Umit Ozlale (2005). Effect of Macro economic Dynamics on Stock Returns :the case of Turkish Stock Exchange Market. *Journal of Economic cooperation* 26(2), 69–90.

[11] Gan, C., Lee, M., Yong, H.H.A., & Zhang, J. (2006). Macroeconomic variables and stock market interactions: New Zealand evidence. *Investment Management and Financial Innovations*, 3(4), 89–101.

[12] Hunjra, A.I., Chani, M.I., Ijaz, M.S., Farooq, M., & Khan, K. (2014). The Impact of Macroeconomic Variables on Stock Prices in Pakistan. *Munich Personal RePEc Archive Paper No. 60791*. Online at http://mpra.ub.uni-muenchen.de/60791/

[13] Hussain, M.M., Aamir, M., Rasool, N., Fayyaz, M., & Mumtaz, M. (2012). The impact of macroeconomic variables on stock prices: An empirical analysis of Karachi stock exchange. *Mediterranean Journal of Social Sciences*, 3(3), 295–312.

[14] Ibrahim, M., & Musah, A. (2014). An Econometric Analysis of the Impact of Macroeconomic Fundamentals on Stock Market Returns in Ghana. *Research in Applied Economics*, 6(2), 47–72.

[15] Ilahi, Ihsan & Ali, Mehboob & Jamil, Raja (2015). Impact of Macroeconomic Variables on Stock Market Returns: A Case of Karachi Stock Exchange. *SSRN Electronic Journal*. 10.2139/ssrn.2583401.

[16] Islam SMN, Watanapalachaikul S (2003). Time Series Financial Econometrics of the Thai Stock Market: A Multivariate Error Correction and Valuation Model. Retrieved on April 6, 2012.

[17] Khan, A., Ahmad, H., & Abbas, Z. (2011). Impact of Macroeconomic Factors on Stock Prices. *Interdisciplinary Journal of Contemporary Research in Business*, 3(1), 472.

[18] Khan, W.A., Javed, M.A., Shahzad, N., Sheikh, Q., Saddique, S., Riaz, M., & Batool, S. (2012). Impact of Macroeconomics variable on the Stock Market index: A Study from Pakistan. *International Journal of Accounting and Financial Reporting*, 4(2), 258.

[19] Kyereboah-Coleman, A., & Agyire-Tettey, K. F. (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange. *The Journal of Risk Finance*, 9(4), 365–378.

[20] Levine, R., & Zervos, S. (1996a). Stock market development and long-run growth. *The World Bank Economic Review*, 2, 323–39.

[21] Maghayereh, A. (2003). Causal Relations Among Stock Prices and Macroeconomic Variables in Small, OEN Economy of Jordan. *JLAU: Econ, & Adm*., Vol. 17(2), 3–12.

[22] Maysami, R.C., Howe, L.C., & Hamzah, M.A. (2004). Relationship between macroeconomic variables and stock market indices: Cointegration evidence from stock exchange of Singapore's All-S sector indices. *Journal Pengurusan*, 24(1), 47–77.

[23] Naik, P.K. (2013). Does Stock Market Respond to Economic Fundamentals? Time-series Analysis from Indian Data. *Journal of Applied Economics & Business Research*, 3(1).

[24] Ologunde, A.O., Elumilade, D.O. and Asaolu, T.O. (2006) Stock Market Capitalization and Interest Rate in Nigeria: A Time Series Analysis. *International Research Journal of Finance and Economics*, Issue 4.

[25] Osamwonyi, I.O., & Evbayiro-Osagie, E.I. (2012). The Relationship between Macroeconomic Variables and Stock Market Index in Nigeria. *Journal of Economics*, 3(1), 55–63.

[26] Oseni, I.O., & Nwosa, P.I. (2011). Stock market volatility and macroeconomic variables volatility in Nigeria: an exponential GARCH Approach. *Journal of Economics and Sustainable Development*, 2(10), 28–42.

[27] Osisanwo, B.G., & Atanda, A.A. (2012). Determinants of Stock Market Returns in Nigeria: A Time Series Analysis. *African Journal of Scientific Research*, Vol. 9(1).

[28] Padhan, P.C. (2007), The Nexus Between Stock Market And Economic Activity: An Empirical Analysis For India, *International Journal of Social Economics*, 34(10), 741–753.

[29] Rahman, A. Abdul, Noor, Z. Mohd Sidek & Fauziah H.T. (2009). Macroeconomic Determinants of Malaysian Stock Market, *African Journal of Business Management*, 3(3): 95–106.

[30] Rashid, A. (2008). Macroeconomic variables and stock market performance: Testing for dynamic linkages with a known structural break. *Savings and Development*, 77–102.

[31] Ray, P. & Vani, V. (2003). What moves Indian Stock Market: A study on a linkage with Real Economy in the post-reform era?, Working Paper, National Institute of Management, Kolkata, 1-19.

[32] Shah, A.A., Aamir, M., & Saba, I. (2012). Empirical Analysis of Long and Short Run Relationship among Macroeconomic Variables and Karachi Stock Market: An Auto Regressive Distributive Lag (ARDL) Approach. *Pakistan Journal of Social Sciences* (*PJSS*), 32(2), 323–338.

[33] Sikalao-Lekobane, O.L., & Lekobane, K.R. (2014). Do Macroeconomic Variables Influence Domestic Stock Market Price Behaviour in Emerging Markets? A Johansen Cointegration Approach to the Botswana Stock Market. *Journal of Economics & Behavioral Studies*, 6(5).

[34] Srinivasan, P. (2011). Causal nexus between stock market return and selected macroeconomic variables in India: Evidence from the National Stock Exchange (NSE). *The IUP Journal of Financial Risk Management*, 8(4), 7–24.

[35] Wongbampo, P. and Sharma, S.C. (2002). Stock Market and Macroeconomic Fundamental Dynamic Interactions: ASEAN-5 Countries. *Journal of Asian Economics*, 13: 27–51.

[36] Xiufang Wang (2010) "The Relationship between Stock Market Volatility and Macroeconomic Volatility: Evidence from China", *International Research Journal of Finance and Economics*, ISSN 1450-2887 Issue 49, Euro Journals Publishing, Inc.

[37] Zakaria, Z., & Shamsuddin, S. (2012). Empirical evidence on the relationship between stock market volatility and macroeconomics volatility in Malaysia. *Journal of Business Studies Quarterly*, 4(2), 61–71.

Emerging Opportunities and Challenges Across the Globe: An Indian Perspective

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Abstract

After the beginning of COVID-19 and the ensuing now-two-year-old Ukraine War the status quo of global geopolitics was upended. These crises upended global geopolitics and opened the door for fresh problems with its fundamental structure. These include difficulties with climate change and its effects on global society, the transfer of technology, energy transition, and supply securitization of food and energy. India faces a range of challenges and opportunities in the global economy. Some of the challenges include economic inequality, unemployment, and the need for infrastructure development. These issues can hinder India's progress and inclusive growth. On the other hand, India has opportunities such as its young and growing population which provides a vast workforce and consumer base. The country's digital transformation and expanding internet connectivity offer e-commerce, fintech, and digital services prospects. Additionally, India's favorable investment climate attracts foreign direct investment, supporting infrastructure, technology, and job creation. By addressing challenges and capitalizing on opportunities, India can strive for sustainable and inclusive economic growth on the global stage.

Keywords: *Economic Crisis, Inflation, Covid Disarray, Global Economy, Energy Price.*

INTRODUCTION

The year 2022 was predicted to be the year that the world economy would recover from the Covid19 pandemic's devastation. But into chaos. Food and energy costs reached record highs as a result of the conflict in Ukraine and the sanctions that followed from the West against Russia, which also disrupted supply networks and hampered global recovery.In response to an already declining economy that was already declining, central banks were compelled to limit the money taps at a rapid rate by raising interest rates, which increased the likelihood of an economic recession in 2023. However, a recession is only one of our financial difficulties this year. Along with some of these crucial challenges, the necessity for "genuine multilateralism" of the institutions of international governance, which would provide each nation an equal voice, represents another significant challenge in global geopolitics. Some of these problems are presenting nations of the world's south with brand-new opportunities and difficulties. In

light of this, a new geopolitical narrative for the Global South is required. The most intriguing feature of the southern region is that it no longer operates within the non-alignment ideology, where the focus was on being neutral in terms of the Cold War's politics. Instead, it is starting to come together as a single bloc, prioritizing equity in global decision-making.

OBJECTIVE OF THE STUDY

- To study the Global economic crisis prevailing in the current time.
- To find out the opportunities for India from these economic crises.

SCOPE OF THE STUDY

India is a developing country that needs the fastest growth of GDP, reducing unemployment to achieve a developed country in 2047. This study provides a current situation of the world economy and an evaluation of the position of India.

RESEARCH METHODOLOGY

This research paper is descriptive in nature. Descriptive research design aims to answer the question related to how, what, and which. Thus this research aimed to examine the opportunities and challenges in the global world. For the purpose of the study, data was collected from various renowned newspapers, published articles, and research papers.

GLOBAL ECONOMY CHALLENGES

An Imminent Recession

After 2009, when the Great Recession was brought on by the global financial crisis, and 2020, when COVID-19 lockdowns effectively halted worldwide economic growth, 2023 is anticipated to be the third worst year for the world's economy this century. Analysts predict that the largest economies of the globe, including those of the United States, the United Kingdom, and the eurozone, will enter a downturn during the year as financial institutions continue to raise interest rates to tame consumer demand and contain rising inflation. In 2023, which she called "tougher" than 2022, a third of the economy worldwide could experience a recession, according to Kristalina Georgieva, the chief of the International Monetary Fund (IMF). The UK and the Eurozone are likely to experience a more severe recession than their peers because of their dependency on Russian fossil resources and the serious energy crisis they are facing. The trajectory of the conflicts in Ukraine will largely determine how much the global GDP would be impacted, according to analysts at The Institute of Global Finance, who also warned that the conflict ran the potential of becoming a "forever war. "Exports will suffer due to the slowdown in advanced nations and a rising dollar, which will be problematic for Asian economies that rely heavily on exports. The good news is that a downturn is likely to be brief and not as bad as previously anticipated, leading to only a slight increase in unemployment.

Stubborn Inflation

In 2023, price increases are probably going to be minimal, thanks to waning demand, declining energy prices, relieving supply bottlenecks, and dropping shipping costs. However, inflation will continue to exceed the central bank's goal levels, leading to additional interest rate increases. The economy will suffer more as a result, and the current global debt crisis could get worse. The eurozone's rate of inflation decline is anticipated to be slower than that of the US. Inflation in the German Republic, the euro zone's economic powerhouse, is anticipated to decline as a result of policies including a curb on gas and electricity costs. However, because of government cash handouts to help households cope with rising living costs, core inflation, which excludes volatile prices for food and energy, may stubbornly stay high. "The resiliency of the Europe region economy, and especially the labour market, suggests that price inflation could be higher than average for longer than we anticipate," said Andrew Kenningham, chief economist for Europe at Capital Economics. He added that core price increases would fall gradually as rising wages keeps inflation in the services sector high.

"That projection carries several clear risks. The outcome of the fuel markets, which in turn dependent on how the situation in Ukraine plays out and the climate, and how German businesses respond to high energy costs are among the "known unknowns," he added.

China's COVID Disarray

China declared a departure from its divisive zero COVID program just a few days before the beginning of 2023. The abrupt change has overburdened the nation's healthcare system as COVID cases have increased alarmingly. The second-largest economy in the world is anticipated to endure short-term disruption due to the onslaught of diseases, based on the experiences of other nations. The fragile revival in global supply networks could take a hit as a result. A novel coronavirus variety could also appear and spread to unrelated regions of the globe. Despite the gloomy short-term outlook, analysts predict that the Chinese economy will conclude 2023 with a large boost thanks to Beijing's decision to abandon zero COVID and its assistance for the struggling real estate market, which contributes about a quarter of the nation's GDP. Asia might have a strong 2023, according to Christian Noting, chief investment officer at Deutsche Bank, who wrote to investors. "Chinese revival, merged with the regional opening up, means Asians could have an excellent 2023," he said. Given that China is the main buyer of commodities, the recovery could "stabilize the economies of neighboring and several nations (such as countries in Latin America)."

An Energy Crisis

The unstable energy situation will continue to provide governments problems in 2023, particularly in Europe. Thanks to milder-than-average weather and consumers who reduced their energy use, Europe may just be able to avoid a full-blown energy catastrophe this winter. The region's facilities for storage, which were packed to the gills last year, may still have

plenty of supplies at the conclusion of this winter due to the lower need for heating. This will probably prevent petrol costs from rising next spring, hence reducing inflation. Even so, the situation can deteriorate before the coming winter. Europe may struggle to restock its storage facilities after spending thousands of millions of € last year searching for alternatives to Russian energy and protecting consumers. Due to China's reopening and the increased need for energy sources in traditional Asian markets like Japan and Korea, the competition for natural gas that is liquefied will be particularly fierce. The major concern for the area, it is noted, is energy, "coupled with a potential gas shortage in winter 2023/2024.

Geopolitical Tensions, Technology War

Similar to in 2022, military and political conflicts will continue to rank among the largest threats to the economy. Russia's war in the Ukraine has no end in sight, but this year's investors will certainly be on edge due to US-China tensions over Taiwan, the top semiconductor producer in the world, and rising tensions on the Korean Peninsula due to North Korea's missile tests. "Abolishing the aggression of Russia in the Ukraine still poses challenges. This entails that there won't be any answers to the conflict's spillover consequences on things like migratory patterns, the world's supplies of fossil fuels and food, and potential geopolitical developments that go well beyond the region, according to Nolting. In 2023, the competition between the United States and China for technological dominance may intensify. A year ago. Washington forbade China from obtaining cutting-edge US semiconductor technology. An endeavour to establish the relevant long-term standards in critically essential domains like 5G, artificial intelligence, and chips has evolved from a trade dispute, according to Noting. Over time, success will broaden the nation's power base. Therefore, neither side will want to give up ground quickly.

Increasing Debt Burdon

A significant rise in the nation's debt is a second effect of the global epidemic and the recovery strategies put in place. This presents a particular issue for developing nations, since the pandemic's economic effects have been somewhat tempered by a short-term halted of debt payments for the poorest citizens. We can only speculate on the effects of eliminating this policy. The government are not the only entities left with enormous debts; private sector businesses are also in this position. Here, we are largely thinking of businesses in the service industry, such as those involved in tourism, culture, and aviation. Additionally, businesses are worried about the disruption of world supply chains, increasing raw material costs, and high transportation expenses for commodities.

Slow Job Recovery and Increase Poverty

In 2022, the majority of emerging nations experienced a slower jobs recovery and are still dealing with significant employment slack. The pandemic's initial phase saw disproportionate

losses in women's employment that have not yet fully recovered, with improvements primarily coming from a rebound in informal employment. The paper claims that slower growth, along with higher inflation and growing debt vulnerabilities, poses a threat to undo hard-won progress in sustainable development and intensifies the already detrimental effects of the current crisis. Nearly 350 million people were already experiencing acute food insecurity in 2022, more than doubling from 2019. The ability of governments to invest more broadly in the SDGs would be constrained by an extended period of economic stagnation and slow income growth, which would also make it harder to eradicate poverty. The most vulnerable people are being impacted the hardest by the current crisis, frequently without their own fault. According to Li Junhua, the United Nations Secretary-General's for Economic and Social Affairs, "the international community must intensify coordinated efforts to stop human suffering and promote an equitable and sustainable futures for all."

STRENGTHEN POSITION FOR INDIA

India Growing Faster than Other Country

We are confident that the market for investments will shortly turn around. In reality, before the economy starts to grow rapidly and steadily, the following two years will be vital for investment to pick up steam. High-frequency data clearly show that growth driving have maintained healthy momentum despite uncertainties, including producing electricity, the Goods and Services collection (using e-way bills), average consumption of fuel per day, market of two-wheeled and tractor trailers, increases in credit across fields and sector,



Figure 1

Source: CMIE, Deloitte research

rate of occupancy in hotels, and purchasing managers' indices (PMIs). As usual, we take uncertainties into consideration when estimating GDP growth. In (figure 1) we anticipate economic growth of 6.0%–6.5% for FY2022-23 and 6.5%–7.0% for the following year. As the global economy improves, we anticipate growth to stabilise at roughly 6.5% over the medium term. Depending on the global economy's recovery and the strengthening of the economic fundamentals, economic activity will probably increase significantly later this year. However, a significant economic slowdown can occur if downside risks negatively impact the assumptions made below regarding the economy's fundamentals and forecast.

Inflation Control

The global economy's slowing and the stability of the prices of petroleum products and industrial raw materials may coincide with a peak in inflation. A more restrictive monetary system will also aid in reducing demand and so restrain the rate of price increase. However, given that we anticipate continued robust demand, the price decline might not last long. In the next months, there may be more pressure on food prices due to the recent unusual rainfall (which have an effect on wheat production and procurement) and any potential effects of El Nino on the monsoon rainfall. Even if investment is turned around sooner, its delayed effects on capacity construction are likely to limit supplies in the short term. During the next two years, we anticipate prices to stay in the upper portion of the RBI's target zone.

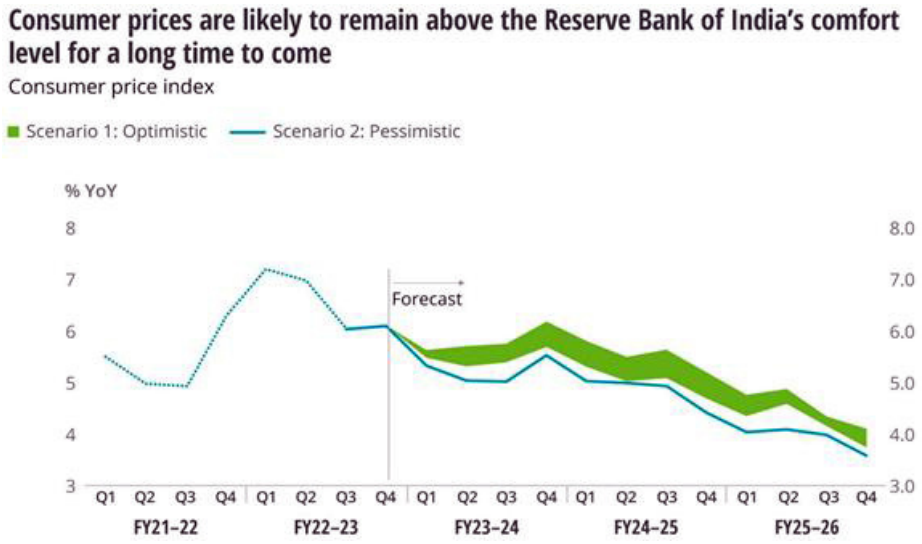


Figure 2

Source: CMIE, Deloitte research

Scope of the Indian Manufacturing Sector

Over the next thirty years, India's population of working age will grow by nearly 200 million from its current 800 million. Between 50 and 60 million people work in manufacturing today.

Manufacturing has the ability to add 85 million more jobs, even with a conservative estimate of a $3.5 trillion production by 2047. 90 million jobs might be created if manufacturing growth increases to $4.5 trillion; this would have a significant positive impact on income and operate as a multiplier for economic growth. India's technological stack serves as a model for large-scale digital disruption and demonstrates the nation's capacity for creative solutions. The upcoming era of smart industrial clusters, linked factories, high-productivity assets, the end-to-end chain of production openness and tech-enabled real-time interventions can all be significant differentiators in manufacturing. With the continuing 5G rollout, this is doable. The greatest method to scale up manufacturing businesses in India over the next ten years from small and medium-sized enterprises (SMEs) to Mid and Large Businesses is by establishing Core Manufacturing industries Infrastructure. Investment in the industry is a fantastic method to increase production and ensure profits—not just for the individual businesses, but also earnings that contribute to the country's gross domestic product (GDP), whether in regards to equipment or technical innovation. With India developing its complete ecosystem for components and fundamental raw materials, the future is full of opportunity. India has used the last 20 years to provide the groundwork needed to scale its production to more substantial and complicated goods. We should unite as a nation to take advantage of the opportunity now that it has arisen.

Growth of the Manufacturing Sector

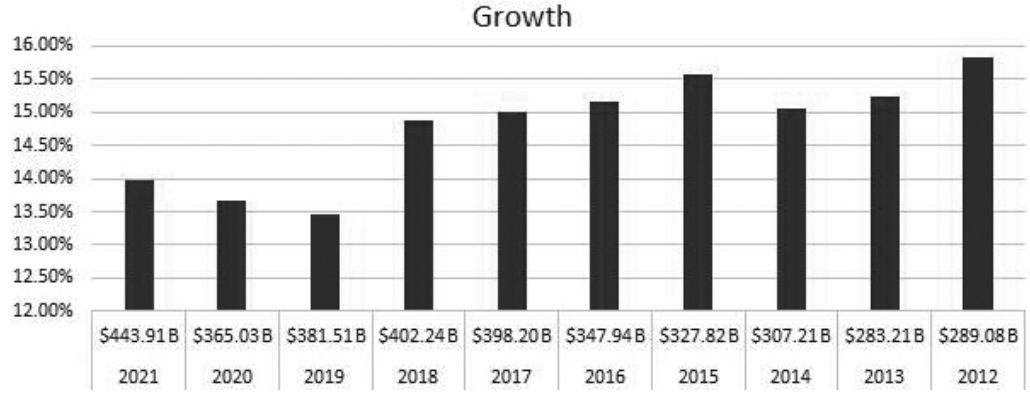


Figure 3
Source: macrotrend

ENERGY DEAL FROM RUSSIA

The data reveals that when it increased its purchases of petroleum from Moscow, the third-largest economy in Asia saved about $5 billion (£4 billion).After Russia invaded Ukraine, Western nations started reducing their energy imports from that country. Russia has been offering energy at a lower price to nations like India and China, the third-largest oil importer in the world. Only 2% of India's total yearly imports of crude oil in 2021 came from Russia.

Currently, the percentage is approaching 20%.According to the data, India's purchases of Russian oil during the most recent fiscal year resulted in a $89 per tonne savings for India. India has defied efforts from the US and Europe to comply with Western restrictions on Russian imports. Additionally, New Delhi has not formally denounced Putin's invasion of Ukraine. India defends its oil purchases, claiming that it is unable to pay higher costs because it depends on imported energy and has millions of people living in poverty.

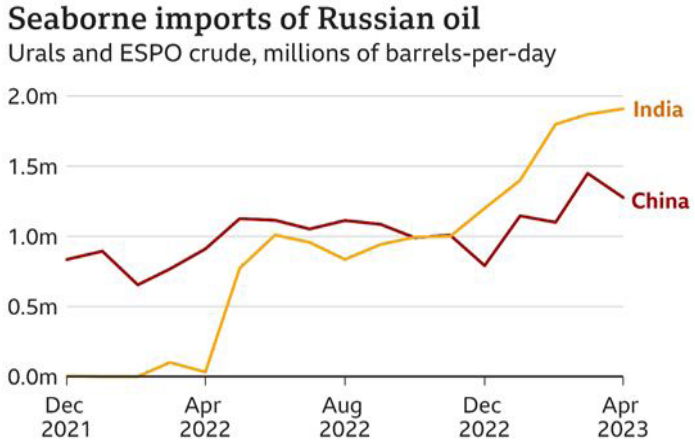


Figure 4
Source: Kpler

Geopolitical Tension and Presidency of G20 Countries

In its most recent forecast, the World Bank warned of a potential global recession and lowered its projections for global growth in 2023 and 2024 as a result of the geopolitical environment, persistently rising inflation, and higher borrowing costs. India, though, continues to be a hopeful figure in this moment in time.The multilateral bank affirms that India is unquestionably an international powerhouse and that during its G20 presidency, India would realize its full potential, pay attention to member ideas and feedback, and engage with the global community. As it highlights the nation's expanding influence and repute on the international scene, India's celebrations of its G20 President can be considered as an example of its developing soft power. The G20 Presidential year is anticipated to aid India in its efforts to improve its image, acquire new partners, and solidify relationships. The platform is anticipated to reflect India's autonomous foreign policy, which is influenced by its rising economic power.Finally, the G20 Presidency offers India a singular chance to enhance its position in the global economic order and develop into a soft power. India is anticipated to contribute to the world community and forge links between various nations and regions as it sets an ambitious, people-centered agenda to address global concerns and promote sustainable economic development. There is little doubt that India's G20 leadership is paving the way for it to become a significant global soft power.

CONCLUSION

India's engagement with the global economy brings both challenges and opportunities. While Slow economic Recovery, unemployment, and infrastructure gaps pose hurdles, India's young population, digital transformation, and favorable investment climate offer avenues for progress. By addressing the challenges and using the opportunities, India can pursue sustainable and inclusive economic growth. It is crucial for India to focus on reducing inequality, creating jobs, and investing in infrastructure to overcome obstacles. Simultaneously, capitalizing on its demographic advantage, embracing digital innovation, and attracting foreign investment will empower India to unlock its full economic potential on the global stage.

REFERENCES

[1] Beck, T. (2006). *Creating an efficient financial system: Challenges in a global economy* (Vol. 3856). World Bank Publications.

[2] Dorian, J. P., Franssen, H. T., & Simbeck, D. R. (2006). Global challenges in energy. *Energy policy*, 34(15), 1984-1991.

[3] Howse, R., & Mutua, M. (2000). *Protecting human rights in a global economy: Challenges for the World Trade Organization* (p. 11). Rights & Democracy, International Centre for Human Rights and Democratic Development.

[4] National Research Council (2012). Rising to the challenge: US innovation policy for the global economy.

[5] Webb, T., & Cheney, G. (2014). Worker-owned-and-governed co-operatives and the wider co-operative movement: challenges and opportunities within and beyond the global economic crisis. *The Routledge companion to alternative organization*, 64-88.

Review of Risk and Return in the Real Estate Market of NCR

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Abstract

This study attempts to review the risk and return from the real estate market of the National Capital Region in India. Various studies identify the critical determinants of the real estate market, which influence the property prices, demand, and supply of properties due to the risk and return being impacted. A primary survey suggests that the builders' reputation and delivery record of the projects in the past are the most influential factors for buyers in the case of residential and commercial projects. Some other factors also influence the risk and returns, i.e. location, amenities, construction quality and popularity of the project etc. Multiple projects are running in NCR of massive and small builders, and buyers are investing in all types of properties to get future returns. This research makes a valuable addition to real estate investment in emerging markets.

Keywords: *Reputation of the Builder, Possession Period, Record, and Risk and Return from the Property.*

INTRODUCTION

The National Capital Region (NCR) in India, which includes Gurgaon, Noida, Faridabad, and Delhi areas, has been a symbolic real estate market with distinctive features. Analyzing the risk and return of the real estate market in the NCR involves considering various factors that influence the sector. Here are some key points to consider:

- **Market Volatility:** The NCR real estate market has experienced fluctuations in prices and demand over the years. Factors such as changes in government policies, economic conditions, and regulatory developments can lead to market volatility.
- **Supply and Demand Dynamics:** The NCR region has witnessed substantial real estate development, resulting in a significant supply of properties. However, the demand for real estate in specific locations within the NCR can vary, influenced by factors like proximity to commercial hubs, infrastructure development, and connectivity.
- **Regulatory Environment:** The real estate sector in India, including the NCR, has undergone regulatory reforms such as the Real Estate (Regulation and Development) Act, 2016 (RERA). These reforms aim to protect buyers' interests, enhance transparency, and

streamline the sector. Understanding the regulatory environment is crucial for assessing the associated risks.

- **Infrastructure Development:** Infrastructure projects, such as the expansion of metro networks, construction of highways, and the development of commercial centres, can significantly impact property prices in the NCR. Areas with improved infrastructure tend to attract higher demand, leading to potential returns.
- **Economic Factors:** Economic conditions, including GDP growth, inflation, interest rates, and employment levels, can influence the real estate market in the NCR. A strong economy and positive consumer sentiment generally contribute to higher demand and potential returns.
- **Rental Yield and Capital Appreciation:** Real estate investors in the NCR evaluate rental yield and capital appreciation potential. Rental yield refers to the income generated from rental properties, while capital appreciation refers to increased property value over time. Both factors contribute to the overall return on investment.
- **Location and Micro-Market Analysis:** The NCR consists of various micro-markets, each with its own dynamics and investment potential. Factors like proximity to transportation, educational institutions, healthcare facilities, and commercial centre play a vital role in determining the risk and return associated with specific locations within the NCR.
- **Developer Reputation:** Assessing real estate developers' reputations, track records, and financial stability in the NCR is essential. Reliable and established developers tend to deliver projects on time, ensuring a lower level of risk for investors.

It's important to note that real estate investments inherently carry risk, and the analysis of risk and return in the NCR real estate market should be conducted on a case-by-case basis. Investors are advised to conduct thorough due diligence, seek professional advice, and consider their investment horizon, financial goals, and risk tolerance before making investment decisions.

Growth Story of NCR

The real estate sector has been grown significantly in National Capital Region (NCR) in India over the years. Here's a brief overview of the growth story of the real estate sector in NCR:

- **Infrastructural Development:** Developing world-class infrastructure has been essential to expanding the real estate market in NCR. The region is now more accessible and appealing to investors and homebuyers because to the construction of metro networks, highways, and motorways.
- **Urbanization and Population Growth:** The NCR has seen a sharp rise in population and fast urbanization. Demand for residential and commercial buildings has increased as more individuals move to cities for better work possibilities. This prompted the growth of various townships, housing developments, and business complexes in the area.
- **Rise of Commercial Hubs:** multiple international corporations, IT parks, and business centres have been established in the NCR's multiple commercial hubs, including

Gurugram and Noida. The growth of these retail centres has accelerated the construction of commercial real estate developments, which has raised the demand for office space.

- **Affordable Housing Initiatives:** The government's emphasis on providing cheap homes has aided in expanding the NCR real estate market. Numerous programs and incentives have been implemented to support affordable housing initiatives, drawing many purchasers and investors. As a result, inexpensive housing units have been built across the region.
- **Integration of Smart Technologies:** The real estate sector fulfils rising demand and accommodates the tastes of contemporary purchasers. The real estate industry in NCR has embraced intelligent technologies. Modern and sustainable living solutions have become more appealing to purchasers thanks to incorporating technology like home automation, energy-saving devices, and digital infrastructure.
- **Development of Retail and Entertainment Spaces:** The NCR has witnessed the evolution of Numerous shopping malls, cinemas, and entertainment venues that have sprung up in the NCR to meet changing consumer demands and lifestyles. Along with expanding recreational opportunities, the retail and entertainment industries have increased demand for commercial real estate in the area.
- **Real Estate Investment Opportunities:** The real estate sector in NCR has potential for expansion and a welcoming investment environment. The NCR real estate market has drawn domestic and foreign investors. The NCR has become a desirable location for real estate investments due to the presence of reputable developers, openness in regulations, and a sizable consumer base.

However, it's important to remember that the NCR real estate market has also experienced difficulties like regulatory adjustments, holdups in project approvals, and sporadic market volatility. Although there has been tremendous infrastructural development, urbanization, and rising investment prospects, the overall growth story of the real estate sector in NCR has been positive.

REVIEW OF LITERATURE

In an ideal market scenario, prices are expected to adjust rapidly, ensuring that the demand for housing matches the available supply at any given time. However, both empirical evidence and theoretical studies have demonstrated that the market for owner-occupied housing often operates inefficiently and responds sluggishly to changes in market conditions (Case and Schiller, 1989). Depasquale and Wheaton's (1994, 1995) research provides compelling evidence that it takes several years for market adjustments to be fully reflected in housing prices.

The decision to invest in real estate goes beyond a simple "to buy or not to buy" dilemma; it also encompasses the crucial element of timing the sale. These two decisions are inherently interconnected since the deal's timing, which generates the most significant cash flow, significantly impacts the overall expected return on the investment (Cheng et al., 2010). The sale of real estate property exemplifies an extremely high-value marketing situation, featuring

a distinctive product within a limited and imperfect market where potential buyers possess a certain level of sophistication (Kapplin, 1978).

Traditional financial theories argue that in an efficient market, where asset returns are assumed to be independent and identically distributed (i.i.d.) over time, the holding period does not affect the expected return and volatility of the asset periodically (e.g., annually). In other words, there is no optimal holding period for financial support. Although the concept of i.i.d. returns remains a topic of debate in the field of finance, it is evident that the real estate market does not operate efficiently, and property returns do not follow an i.i.d. pattern (Young and Graff, 1995; Englund et al., 1999; Gao et al., 2009). The non-i.i.d. nature of real estate returns implies that the performance of real estate investments depends on the duration of the holding period.

Chau (1997) studied research papers on Asian real estate markets published in 17 real estate-selected academic journals. Characteristics of these studies were identified, and future research directions are speculated upon.

Wu (2000) and Zhang (2000) examined variables like economic globalization, marketization, and privatization inthe arena of urban land and housing. The work also explores the implications for urban planning and real estate growth in China's urban development. It also examines the salient features of the transitional economy concerning land and housing reform.

Mills (2001) suggested systematic management approaches to risk. He discussed the allocation of risk and suggested that risk needs to be identified and managed early in the procurement process by demonstrating the effectiveness of systematic risk management.

Kryvobokov (2006) identified the list of statistically significant location attributes, which are the most important for market value of real estate in countries with well-developed markets. These lists of important location attributes can be used for practical specification of the valuation models for urban land and other real estate in countries where the market is underdeveloped to increase the degree of objectivity and market orientation.

RESEARCH GAP

Numerous studies have been undertaken to analyze the factors that affect housing costs& commercial costs in the residential/commercial real estate market and to judge the effectiveness of the market. However, there is a shortage of studies examining the connection between residential/commercial properties that have already been finished and residential/commercial properties that are still being built. The variation in the "market value" of invested equity in two markets also needs to be more thoroughly examined.

Comprehensive studies on information transmission and price discovery in the spot and forward groups of residential/commercial properties, domestically and globally, are lacking in the extant literature. In addition, there is a shortage of research, particularly in the Indian context, on real estate returns over the holding period. The real estate developers must deal with various risks, and without adequate risk management strategies, real estate investors would eventually run out of money. This disruption significantly impacts the process of making real

estate investment decisions. The business climate of the real estate sector in India is changing, which has resulted in the introduction of several new hazards. In order to effectively manage risk, Indian real estate enterprises must adopt a more systematic and scientific approach.

As a large number of investors rely on the real estate sector for future returns,it is essential to develop a system for choosing the projects that would yield the highest returns while posing the fewest risks. It is crucial for the Indian real estate sector to successfully integrate risk management practices. The Indian real estate industry will benefit from this integration in terms of both its competitive edge and its ability to successfully traverse this moment of transformation.

Major Risk Factors in Real Estate Sector



OBJECTIVES

- To find out the risk associated with returns in real estate investment in NCR
- To check thegrowth of investment in real estate market in NCR

METHODOLOGY

This study uses descriptive analysis and discussion based on information gathered after a series of meetings with the response group (Cushman & Wakefield subject experts, developers, brokers, and others) besides a literature review. The study's second source for its finding includes several trustworthy newspapers and online databases, etc.

Analyzing Risk – Adjusted Returns

To assess the relative attractiveness of each market within the risk-return framework, the Sharpe ratio was computed for each return series in the two groups, namely spot and forward projects. The Sharpe ratio provides a measure of risk-adjusted returns and is calculated using the following formula:

$$(Rp - Rf) / \sigma$$

$$\text{Sharpe Ratio} = \frac{(\text{Average Return} - \text{Risk-Free Rate})}{\text{Standard Deviation of Returns}}$$

Where Rp is the return on each category in the spot and forward groups, respectively, Rf is the risk-free proxy, and σ is the standard deviation of the excess returns for the specific type.

The Quality Premium in Spot and Forward Categories: Analysis

The quality premium is the extra cost that buyers are prepared to pay when moving from a lower category of habitat to a greater variety to obtain the elements they perceive to be

of incrementally more outstanding quality. The primary survey's composite ratings, which gauge the product's qualities, are used to calculate this premium.

Investors and market participants can assess the desirability and possible profits of switching to higher-quality habitat categories within the two groups by looking at movements in the quality premium. For people and organizations involved in the real estate market, knowing the dynamics of the quality premium can help determine market preferences and direct investment plans and decision-making processes.

CONCLUSION

Despite the high risks associated with the real estate industry, the NCR region is experiencing substantial growth. Several developers are launching various projects, including ultra-luxury, luxury, affordable housing, builder floors, commercial open market malls, covered malls, and SCR plots. However, a substantial portion of these projects have been sold out, indicating that investors are aware of the risks involved but are still willing to invest in the real estate market with reasonable future return expectations.

This trend highlights the NCR real estate market as a highly favourable region for investors in India. Despite the inherent risks, the market's growth potential and the prospects of securing profitable returns continue to attract investors. The region's diverse range of projects across different segments provides investment opportunities suited to various investor preferences and objectives.

It is important to note that investing in the NCR real estate market requires careful consideration of the associated risks and thorough due diligence. However, the favourable conditions and the presence of eager investors signify the market's attractiveness and potential for generating substantial returns.

LIMITATION

This research study is limited to the NCR region and is based on the few articles and papers available in open access. The inputs have only been taken from one real estate agency and real investors, and their experiences and returns data not are The perceived returns and actual realization have not included in this study. Other aspects can take into study for future studies.

FUTURE SCOPE

- To find out the gaps between expected returns and actual realization in the real estate sector.
- To study the different regions of India for the real estate market

The study can be conducted on the primary data with a large sample of respondents. To do a more thorough empirical analysis, a longer time frame with more data points may be used. Future studies could include more Indian residential and commercial real estate micro-markets to compare their outcomes with NCRs and develop a comprehensive framework for the country's real estate industry as a whole.

REFERENCES

[1] Case K.E. and Shiller R.J. (1989). The Efficiency of the Market for SingleFamily Homes, *The American Economic Review*, 79, 125–137.

[2] Depasquale D. and Wheaton W. (1995). Urban Economics and Real Estate Markets, Prentice Hall, Englewood Cliffs, NJ.

[3] Depasquale, D. and Wheaton, W. (1994). Housing Market Dynamics and the Future of Housing Prices, *Journal of Urban Economics*, 35, 1–27.

[4] Englund P., Gordon T. and Quigley, J. (1999). The Valuation of Real Capital: A Random Walk Down Kungsgatan. *Journal of Housing Economics*, 8, 205–216.

[5] Ernst and Young (2013). Brave New World for India Real Estate: Policies and Trends that are Altering Indian Real Estate

[6] Fulong Wu, "China's Recent Urban Development in the Process of Landand Housing Marketisation and Economic Globalization", *Journal onHabitat International* 25 (2001), 14 August 2000, www.elsvier.com/locate/habitatint, 273–289.

[7] K.W. Chau, "Real estate research in Asia – Past, Present and the Future", *Presidential address delivered at the Second Asian Real Estate Society Conference*, 20–22 October 1997, Hong Kong.

[8] Kapplin, S.D. (1978). Economic Forecasting for Real Estate Appraisal, *Real Estate Appraiser*, 47–55.

[9] Kryvobokov Marko, "What location attributes are the most importantfor market value? Extraction of attributes from regression models", *Property Management*, Volume 24, Issue No. 3, 2006, 257–286.

[10] Mahalik, M. & Mallick, H. (2011). What Causes Asset Price Bubble in an Emerging Economy? Some Empirical Evidence in the Housing Sector of India, *International Economic Journal*, 25, 2, 215–237.

[11] Mills Anthony, "A Systematic Approach to Risk management forConstruction", *Structural Survey*, Volume 19, Issue No. 5, 2001, 245–252.

[12] Newell, G., & Kamineni, R. (2007). The significance and performance of real estate markets in India. *Journal of Real Estate Portfolio Management*, 13(2), 161–172.

[13] Sehgal, S., Rajput, N. & Deisting, F. (2013). Price Discovery and Volatility Spillover: Evidence from Indian Commodity Markets, *The International Journal of Business and Finance Research*, 7, 3, 57–75.

[14] Sehgal, S., Rajput, N. & Deisting, F. (2013). Price Discovery and Volatility Spillover: Evidence from Indian Commodity Markets, *The International Journal of Business and Finance Research*, 7, 3, 57–75.

[15] Waweru, N.M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of business and emerging markets*, 1(1), 24–41.

[16] Young, M. & Graff, R. (1995). Real estate is not normal: A fresh look at real estate return distributions. *Journal of Real Estate Finance and Economics* 10, 225–259.

[17] Zhang, Y., Hua, Z. & Zhao, L. (2012). Exploring determinants of housing prices: A case study of Chinese experience in 1999 2010, *Economic Modelling*, 2349–2361.

SECTION 3

TRANSFORMATION IN GREEN MARKETING PRACTICES

Examining the Effects of Confirmation Bias on Consumer Search for Information and Use of Information Sources

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Abstract

The main objective of this study is to examine the effects of confirmation bias on consumers' information search process when making purchase decisions. Confirmation bias is defined as the tendency for people to seek information and cues that confirm their tentatively held hypotheses or beliefs, while ignoring or discounting those that support an opposite conclusion or belief (Lehner et al., 2008). In a purchase situation, confirmation bias suggests that consumers will seek information that supports their purchase decision to assure or confirm that they made the right choice. In this regard, the study intends to find out whether consumers conduct more research before making a purchase or after making a purchase. Additionally, the study aims to identify the sources of information that consumers use the most to gather information before and after making purchase decisions, as well as whether the sources of information used differ before or after making purchase decisions. Moreover, due to recent technological developments, consumers have a variety of sources available to gather information for their purchases. These sources include various digital and social media platforms, personal sources, as well as traditional sources.

Given the main objectives of the study, the specific research objectives (ROs) are:

(a) Identify the major sources of information consumers use to gather information before making their purchases.

(b) Investigate whether consumers search for more information before purchasing and/or after purchasing the products and services.

(c) Determine the sources of information that consumers use to confirm their purchases.

These research objectives aim to provide insights into the sources of information consumers rely on during their decision-making process, whether they engage in information search predominantly before or after making a purchase, and how they use information to confirm their purchase decisions, as well as the sources of information consumers use before and/or after purchases.

To assess the information sources utilized by respondents, a list of sources was provided, and respondents were asked to indicate if they used any of these sources before and/or after making their purchase decisions. Additionally, respondents were asked to rate their information search behavior on a 5-point scale for each product or service. The scale ranged from 1 = definitely before, 2 = before, 3 = both before and after, 4 = after, to 5 = definitely

after. The survey also included relevant demographic questions to gather information about the respondents. The survey was conducted among students at a major private university in the Midwestern United States and Saudi Arabian student studying in the U.S. Convenient network sampling was utilized to collect responses, which produces a total of 165 usable responses. The demographic breakdown of the respondents shows that 45.5% identified as male, while 54.5% identified as female. In terms of nationality, 35.3% of respondents were American, 57.7% were Saudi Arabian, and 7.1% preferred not to answer.

The results indicate that 89.1% of respondents had purchased a cell phone, 87.2% had purchased a computer, 36.5% had purchased a game console, 61.5% had purchased a car, and 69.9% had made a college selection. Concerning information search before and after purchases, the study found that most respondents searched for information before making their purchase decisions, with responses ranging from 52.9% to 65.8% indicating "before or "definitely before." Around 25% of respondents indicated searching both before and after making purchases. Additionally, 9.9% to 16.0% of respondents indicated searching for information "after or definitely after" making their purchases.

These findings suggest that while most respondents conducted information search before making their purchase decisions, a significant portion of them also engaged in information search to support their decisions after their purchase. In fact, when considering the responses for both "before and after" and "after and definitely after" combined, it shows that 35% to 45% of respondents conducted information search after making their purchase. This finding supports the presence of confirmation bias, indicating that consumers tend to search for information to reinforce their decision. Overall, the results imply that consumers actively seek information both before and after making purchases, suggesting the influence of confirmation bias on their decision-making process.

Concerning the sources of information used, the study found that the top five sources of information used by the respondents before making their purchase decisions were friends (93.6%), followed by Google (92.3%), family members (84.6%), Amazon (83.3%), and YouTube (73.7%). After making their purchases, the top five sources of information that consumers used were Google (84.6%), friends (82.7%), family members (79.5%), YouTube (73.7%), and Amazon (61.5%). These findings indicate that consumers tend to rely on similar sources of information both before and after making their purchases, with some minor differences.

The implications of these findings are that companies and brands should continue to provide relevant information about their brands to influence consumers' purchase decisions and assure them that their choice to purchase their brand was the right decision. The study found that consumers use similar sources of information before making purchase decisions and to support their decisions after making purchases. The findings suggest that brands should never stop marketing and should continue to provide the information consumers need to make their decisions and confirm their choices by utilizing the identified sources of information to influence consumers' purchase decisions and support and confirm their purchase decisions.

REFERENCE

[1] Lehner, P.E., Adelman, L., Cheikes, B.A. and Brown, M.J. (2008). Confirmation Bias in Complex Analyses, *IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans*, Vol. 38, No. 3, pp. 584–592, (May), doi: 10.1109/TSMCA.2008.918634.

Green Marketing Practices: A Study on Sustainability of Recron and R/Elan Green Gold

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Abstract

Green marketing focuses on marketing techniques that educate consumers about the advantages of utilizing environmentally friendly goods and services while promoting environmentally friendly products and services. The sustainable development is a goal shared by many organizations and government. Some companies recognized their potential and altered their marketing strategies to focus on their social responsibility in order to influence customers' purchase decisions. Many companies prioritize sustainable practices and innovative product development in addition to maximizing profits. Therefore, green marketing is crucial for the sale of eco-friendly goods and services. It encompasses creativity and the application of numerous strategies and approaches for the development of goods or services. Reliance Industry has introduced Recron Green Gold, which uses eco-friendly fibre from recycling plastic bottles and is utilized in several clothing, home décor, and non-clothing products with the lowest carbon footprints worldwide. With the assistance of fashion designers and manufacturers, R/Elan creates fabrics using the greenest fibres that follow the most recent fashion trends. R/Elan collaborates with numerous mills nationwide to create its newest fabrics. The study provides an understanding of green marketing initiative of recron and r/Elan green gold. The study is based on secondary data. For understanding the green marketing concept, several research articles that have been published in different publications have been carefully examined. The company's website has provided the essential information on it's green marketing techniques. The study tries to analyze the Recron and R/elan green gold sustainability through selected components of green marketing such as environmental concern, SWOT analysis and 4 Ps of green marketing mix and 3 Ps of service marketing mix.

Using SWOT analysis, the circumstances and surroundings of the target object can be thoroughly and precisely investigated in order to create development strategies and plans. SWOT analysis aids decision-making and planning for the organisation by managers and executives. The full notion of enterprise competitive strategy states that a company's strategy should be a fusion of its organisational strengths and limitations with external opportunities and threats. Reliance determined its corporate social responsibility and offer the fibre that is eco-sensitive in nature. Reliance adopted marketing strategies such as co- branding, green product, green labelling, green packaging, promotion, timely delivery of product that create brand image among consumers and also lead to customer satisfaction. Through social media, the Reliance industry raises visibility and brand recognition. Opportunities for collaboration

help businesses to grow their influence among consumers and making them more successful and long-lasting. Beside branded products company should understand the local demand and focus on local supplier so that it reaches each and every corner of the country. To differentiate itself from many rival businesses and increase its market share in a highly competitive industry, a company must be innovative and distinctive.

Keywords: *Green: Enterprises, Product, Marketing Strategy, SWOT Analysis.*

INTRODUCTION

Green marketing focuses on marketing techniques that educate consumers about the advantages of utilizing environmentally friendly goods and services while promoting environmentally friendly products and services. Eco-friendly products use environmentally friendly packaging, design, and manufacturing techniques. Additionally, the company takes socially responsible actions including recycling, removing hazardous raw materials from its supply chain, employing renewable resources, and cutting carbon dioxide emissions. According to J. Polonsky the actions that meet human needs or wants while having the least possible negative effects on the environment are referred to as green marketing. Green marketing is a strategic management technique that satisfies stakeholder needs in exchange for a benefit that doesn't harm people or the environment (Charter, 1992). According to the American Marketing Association, green marketing is the creation and advertising of goods and services that are safe for the environment. It improves affordability, performance, and quality.

Environmental concerns are a big deal today. The sustainable development is a goal shared by many organizations and government. Some companies recognized their potential and altered their marketing strategies to focus on their social responsibility in order to influence customers' purchase decisions. Many companies prioritize sustainable practices and innovative product development in addition to maximizing profits. Therefore, green marketing is crucial in the sale of eco-friendly goods and services. It encompasses creativity and the application of numerous strategies and approaches for the development of goods or services. The fusion of technology and consciousness has contributed significantly to green products. In order to add value to their products and serve the interests of many stakeholders, green enterprises have recognized the concept of green marketing. Innovative product development methods may open up new business options for the corporation and promote diversity.

INITIATIVE BY RELIANCE INDUSTRY

The largest private sector company in India is Reliance Industry Limited. It engages in petrochemicals, textiles, retail, and digital services etc. It is working towards preventing pollution, reducing waste, and maximizing recycle. In addition to this, it provides training to the staff members on environmental stewardship and encourage customer to conserve the environment. It reports on its environmental performance in accordance with GRI principles.

Reliance Industry has introduced Recron Green Gold, which uses eco-friendly fibre from recycling plastic bottles and is utilized in several clothing, home décor, and non-clothing

products with the lowest carbon footprints worldwide. According to corporate report, 2.2 billion used PET bottles are turned into green gold fibre each year. They gather PET bottles and turn them into recron green gold, one of the greenest fibres. Along with being used in a variety of products, this fibre is also employed in the production of R/Elan green gold fabric because of partnerships with several supply chains. The greenest fibres are Recron fibres, which adds the colour to the basic materials rather than utilizing a dying technique. Biofuels and pre-dyed fibres used in the production process take the place of the water and chemicals released at each stage. To assess the advantages of eco-friendly items, it also makes use of eco labelling and eco packaging.

With the assistance of fashion designers and manufacturers, R/Elan creates fabrics using the greenest fibres that follow the most recent fashion trends. R/Elan collaborates with numerous mills nationwide to create its newest fabrics. Additionally, it moves in the direction of eco-friendly raw materials, a sustainable supply chain, and environmental responsibility.

RECRON GREEN GOLD MOVING TOWARDS CREATING WEALTH FROM PLASTIC

Reliance has a recycling facility with cutting-edge ideas used to increase the performance from billions of PET bottles. Recycling of PET bottles influences the company's brand image, sustainability, and loyalty. Recycling also enhances the company's corporate social responsibility. It places a strong emphasis on using reduce, recycle, and reuse to manage fabric waste systematically. Recron Green Gold strives to reduce carbon footprint at each stage of the manufacturing process, from PET bottles to fibres. Recron green gold fibres used in Apparel, fashion wear, home textile, technical textiles, etc.

R/ELAN GREEN GOLD AN INTEGRATIVE ROLE FOR GREEN MARKETING APPROACH

1. **Corporate social responsibility:** Reliance Industries determines its corporate social responsibility and seeks to help the environment by producing sustainable apparel. Additionally, it set a goal and aims to make a significant contribution to sustainable development. Reliance Company's key endeavour is R/Elan Green Gold, which uses millions of PET bottles and turns them into fibres than to fabrics. It also uses a variety of green marketing techniques to educate customers and manufacturers about the benefits of using eco-friendly fabric for clothing. As a result, it motivates various stakeholders to act in an ecologically conscious manner.
2. **Role of government:** Government has always tried to help businesses that are more environmentally conscious. In addition to offering businesses a variety of chances through a variety of channels, the government also recognized Recron Green Gold Fiber's efforts through awards that inspire and motivate them to reach their objectives.
3. **Role of supply chain partners:** R/Elan partnered with various textile manufacturers and moving towards adding additional dose of sustainability to their fabrics. Textile

manufacturers also provide their manufacturing and marketing skills to R/Elan green gold fibres and create a mass appeal.

4. **Role of fashion industry:** Using R/Elan Green Gold eco-friendly textiles, fashion houses and designers with a feeling of social responsibility produce sustainable clothes. They work to meet the needs of the environmentally conscious customer group. Previously, buying environmentally friendly products demonstrated one's concern for the environment, but today's fashion demands ecologically friendly attire. By showcasing their skills at numerous events and on social media, innovative designers also put in a lot of effort to raise customer awareness.
5. **Role of consumers:** Consumers are turning towards trendy, globally acclaimed sustainable clothing. Customers praised fashion designers for their efforts in introducing their eco-friendly clothing. Consumers today vary their opinions and preferences by becoming more environmentally conscious, and they also play a significant role in educating the non-adopters through word-of-mouth marketing.
6. **Role of social media:** The promotion of sustainable clothes by various producers and fashion designers is greatly helped by social media. It is a crucial channel for getting innovative and sustainable concepts out to customers. Customers are aware of the current developments in sustainable clothing.

LITERATURE REVIEW

Sustainable Development

Green marketing affected consumers' intentions to buy things and it linked to sustainable development (Jeevandas et al., 2019). Additionally, it indicated that green marketing initiatives and awareness campaigns can close the gap between green attitudes and behaviours. Green product purchases can contribute to sustainable development and an improvement in the national economy. Kardos et al. (2019), stated that sustainability can be attained by defining the duties of green marketing through customer awareness, education, and information. It's crucial for businesses to promote their products sustainably, yet one of their biggest issues is striking a balance between social responsibility and revenue (Mohanty and Nayak, 2017). With the advent of green marketing, businesses now have the chance to co-brand their goods under different product lines, praising some products for their eco-friendliness while disregarding others (Singh and Pandey, 2012). Green marketing is a new area of marketing that prioritises both customer satisfaction and environmental protection (Singh, 2015). Similar to green consumerism, the green marketing trend emphasises firms' social obligation to ensure that their operations have the fewest possible adverse consequences on the environment (Eneizan, 2019)

Green Marketing Strategies

According to Nagarajan (2016), green marketing is concerned with social and environmental issues in addition to marketing-related ones. Wahab (2016), highlighted that green people,

green products, green promotion, green price, and green distribution were the five scales that made up the green marketing strategy. Alhamad et al. (2019), highlighted the idea of green marketing strategies, which is helpful in deciding whether to buy green products**.** Jaju (2016), findings depicted that environmentally friendly customer behaviour was positively impacted by green packaging, green branding, green products, and premium green pricing. Environmental advertising was also said to have a negative influence on customer behaviour. Sadiq (2017), depicted that the inclusion of green product and place in the marketing mix has a beneficial impact on brand quality, brand loyalty, and brand trust. Fraj et al. (2011), highlighted that green marketing strategies increase a company's profitability and efficiency. Efficiency increases when a corporation makes operational changes by employing less expensive and environmentally friendly raw materials (Eneizan, 2019).

Green Consumers

Consumers are satisfied with the quality of green products and are willing to pay a higher price for them (Wahab, 2016) and further stated that the green marketing strategies are effective for customer satisfaction. People are becoming more conscious of environmental issues, thus businesses are moving towards green marketing to differentiate themselves from other businesses (FuiYeng and Yazdanifard, 2015). Customers are willing to pay a higher price for the product since they are aware of the company's involvement in environmental issues (kumar, 2015). The company's green logo influences customers' purchasing decisions and encourages them to purchase eco-friendly goods (Yazdanifard and Mercy, 2011). Bhatia and Jain (2013), recommended that themes should be the core of marketing communication and advertisements should appeal to consumers' emotional needs. One can convince customers that value the environment to purchase the eco-friendly goods. Influence of marketing communication could be on customer purchasing behaviour (Maheshwari, 2014). The green product lines can fulfil the targeted consumer categories while ignoring the other demographic segments. The business can develop its marketing plan as a green marketing strategy and can try to change its variety of operations (Singh, P.B., and Pandey, K. 2012).

Martinez (2014), investigates the connection and discovers that green image has favourable effects on green satisfaction, trust, and loyalty. Additionally, he came to the conclusion that green loyalty is positively impacted by both green satisfaction and green trust, and vice versa. Customer satisfaction, business expansion, and environmental safety are all positively impacted by using green promotional tools (Basha, 2015). Businesses should adopt green marketing strategies, educate consumers, and stop producing harmful products. This information needs to be shared with all relevant stakeholders including the general public (Saleena, 2015). Governments everywhere pushed businesses to create eco-friendly practises and clean technologies. In India, the government has placed more focus on environmental issues after seeing how well customers responded (Singh, 2017).

RESEARCH GAP

The majority of studies related to green marketing are conducted in developed countries and their companies and try to evaluate the company's marketing strategies, marketing mix and its influence on consumer buying behaviour and the impact of green marketing on customer satisfaction. Limited study is done on the green initiative by business organization in India. So, this study provides an understanding of green marketing initiative of recron and r/Elan green gold.

OBJECTIVES OF STUDY

1. To propose a Swot analysis of R/Elan and Recron green gold to attain sustainability.
2. To discuss the green marketing mix with special reference of R/Elan and Recron green gold.

Analyzing the Recron and R/elan green gold sustainability through selected components of green marketing



RESEARCH METHODOLOGY

The present study is based on secondary data. For understanding the green marketing concept, several research articles that have been published in different publications have been carefully examined. The company's website has provided the essential information on it's green marketing techniques. Newspapers, periodicals, books, journals and government reports are among the secondary data sources.

SWOT Analysis

It is necessary for an organization to monitor the environment to identify opportunities and threat affecting their business. SWOT analysis is used to determine organization's strength,

weakness, opportunities and threat. As environment scanning help the organization to take strategic decision. It is one of the approaches to strategic analysis that is most frequently utilised. SWOT analysis is frequently used to create a company's development strategy and evaluate the status of competitors. SWOT analysis is based on the environment and circumstances both internally and externally. Using SWOT analysis, the circumstances and surroundings of the target object can be thoroughly and precisely investigated in order to create development strategies and plans. SWOT analysis aids decision-making and planning for the organisation by managers and executives. The full notion of enterprise competitive strategy states that a company's strategy should be a fusion of its organisational strengths and limitations with external opportunities and threats.

Strength

- Manufacturing of eco-friendly fibres and fabric enhance the company image, brand and goodwill. The building of strong customer loyalty, which is particularly beneficial to the long-term success of the business, is facilitated by unique services and goods.
- Partnership with various brands and supply chain create confidence in consumers about the attributes of product and the company's collaboration with numerous domestic and foreign companies, which promotes the demand for its fibre on a global scale.
- Green marketing opens up new markets and satisfies environmentally conscious consumers' needs.
- Eco friendly product, packaging, labeling influence the customer demand and make them to differentiate it from other competitive products.
- As customers become more aware of environmental risks, they become more product-conscious.
- Eco friendly fibre and fabric create appeal to customers as they have several attributes such as high quality, high performance etc.
- In order to make a product affordable for consumers, company aim to match the pricing of sustainable products to non-sustainable products with similar attributes.
- New approaches and innovations set their goods apart from those of competitors products and increase their usefulness.
- The company's wide range of products not only address current needs, but also inspire customers to switch to eco-friendly fabrics of the next generation.
- Promotional tools and co- branding are the best marketing strategies of the Reliance industry which encourage company to create mass appeal.
- Collection of PET bottles from landfills engaged thousands of people and inspire other people also to connect with the project which leads to enhance the name of company and its products.
- Recron green gold and r/elan has strong backing support of reliance industry.
- Well trained staff create power pack performance of company.

Weakness

- Many customers are not aware of the green products of the company as they believe that such products are marketing gimmick.
- Consumers are more influenced by their own demands than by environmental concern.
- Promotional activities create a lot of time to reach customers.
- In developing countries such as in India customers hardly accept the change in products.
- Many people are still unaware of the companies that own Reliance, such as Recron Green Gold and R/Elan Green Gold, which manufacture eco-friendly fabrics and products.
- In developing country Customers are not ready to pay premium price for the product due to this they are not eagerly accepted the product.
- Company faces a lot of competition in market for its fashion brands and its products.
- Customers have shown some resentment towards new concepts and technologies. Weak customer relationship management.
- They require enough revenue to create new initiatives and grow sustainable businesses, which are essential to the organization's sustainability and long-term profitability.

Opportunities

- Recron green gold and r/elan create new market opportunities by moving towards new technology and create awareness among consumers for eco-friendly products.
- Company now finding its way in developing technologies for waste disposal in other segments also.
- The company is advancing its expansion goal by working with numerous national and international brands that command the largest market share.
- To meet the needs of customers who want to alter their habits by providing them with unique products.
- Government programmes restrict the production of hazardous goods and services and show appreciation for the businesses that step forward to promote environmentally friendly items.
- Green marketing emphasis on additional quality in products which customers are unaware about it.
- It forges new paths and develops substitute goods or services through innovation and novel strategies.
- It also gives a competitive advantage over rivals. It is sensitive of the changing demands of consumers, who are now more interested in eco-friendly products and recyclable goods.
- Additionally, the market for green products and customers is growing. For any green business, investigating the market and potential customers are crucial.
- Youth with greater levels of education are more likely to be environmentally conscious consumers and are prepared to pay extra for environmentally friendly goods.

Threats

- Indian consumers find the concept of green marketing difficult to embrace, which has major implications for firm marketing strategy policy.
- lack of government's participation in green marketing can lessen a company's efforts to promote sustainability.
- Tough competition with rivals who enjoy high consumer demand.
- Green marketing occasionally overlooks the economic factors of people, which causes uncertainty for the business.
- As consumers become more knowledgeable about green products, demand for the company's goods can declines.
- Demand shifting could pose a challenge to company's policy or deciding marketing strategies.
- More green start-ups are appearing, entering the market, and capturing market share. Threats to every eco-focused start-up include an increase in competitors with comparable business models.

Sustainable Marketing Strategies

- **Marketing research strategies:** Unlike other marketing research tactics, the green market research strategies are unique. It identifies comparative and competitive advantages, unusual conditions, market demands, and variables according to environmental factors.
- **Production strategies:** Reliance company with its innovation deal in partnership with several textile and fashion industry. It aims to produced sustainable fibre that are eco sensitive in nature and are made by recycling of millions of PET bottles. This fibre is growing in popularity and are used by several brands and manufacturers. The partners get technical and new product development assistance from R/Elan technologies.
- **Product strategy:** Innovative product demands creativity which serves the customer and make them aware of the new product. New marketing strategies are needed for green products and changing market condition. So, several campaigns are launched by R/Elan for promoting green gold fibre.

Marketing Mix

The green marketing mix is one of the tactics used by producers to meet customer demands. They produce the product, set a price, placing a product and promoting a product through mass media and advertisement. The marketing mix can be altered in response to customer demand and shifting market conditions. Customer happiness and brand loyalty are significantly impacted by the green marketing mix.

GREEN PRODUCT

Products, services, and behaviours that are green help to preserve resources for future generations and strengthen our economy. The green products are made with the intention of preserving the environment. Green products include qualities that improve their functionality, attractiveness, and selling aspects.

Recron green gold provides fibres with low carbon footprints that is made from recycled post-consumer PET bottles. These fibres have forensic authenticity and are sustainable. This fibre transforms into a fabric with a variety of properties, and this fabric subsequently satisfies the demands of the whole textile and fashion industries. Reliance Recron green gold also use this fibre that turn into fabric in home décor products. Reliance industry move forward in creating and developing apparel made from Recron green gold fabric. Recron green gold fabric provides both apparel and non-apparel to its customers as well as raw materials to numerous textile industries, which are then employed by numerous fashion designers. Reliance industry tries to put emphasis on green fibre, and there is a significant demand from both domestic and foreign brands. Recron Green Gold offers fibre that is as good as virgin polyester fibre and has a variety of qualities to meet customer demands. With the assistance of fashion designers and manufacturers, R/Elan creates fabrics using the greenest fibres that follow the most recent fashion trends.

In emerging nations, sustainable product development is still necessary. The behavioural aspects of customer can't be easily measured. Several characteristics of products influence the customer purchasing decision towards green products or apparels. Once the customer behaviour characteristics have been established, the product development approach should be equally spread throughout the product life cycle.

Green Product Package

A package is simply a wrapping or container used to protect the product. Green packaging makes use of recyclable and biodegradable materials. It easily helps to identify the characteristics of product. R/Elan and Recron green gold used three R in reducing the waste of resource. Lightweight plastic carry bags that are created from recycled PET bottles and may be used 1,000 times each contribute to the reduction of litter. In addition, Recron Green Gold and R/Elan Green Gold use non-toxic plastic and biodegradable packaging for a number of their products. According to the Environmental Protection Agency, a material is considered biodegradable when biological processes are used to break it down.

Green Product Labelling

Product labels provide detailed information about the goods. Labels are used to describe a product's quality, ingredients, and other information. R/elan and Recron green gold products are labelled using eco-friendly stickers and labelling. Consumers are reassured about the authenticity of green products by Recron green gold tags and labels. These tags and labels are used when the materials used to make clothing and non-clothing have been certified.

Green Product Branding

Green product branding increases the customer's loyalty. Consumers are informed of the identity of a product via a brand, which is a symbol, mark, or term. Brands that are considered green are linked to environmental preservation practices. It also enhances the image of brand through sustainable practices. R/Elan also join hands with several brands or textile manufacturers which influence the demand of consumers. Through sustainable business practises, co-branding of apparel influences customer buying decisions and improves the company's credibility. Fabric made from R|Elan GreenGold Ecocean can be used to make women's clothing, formal attire, denim, and casual clothing. The brand name Recron GreenGold Ecocean is used for this fabric in the home textile market.

Green Price

Price is the value of product expressed in terms of money. The cost of marketing, the routes of distribution, the prices of competitors, the cost of manufacturing, and supply and demand cycles are just a few of the many factors that influence product prices.

Green pricing takes into account corporate policy, revenue, social responsibility, and productive efficiency. While consumers in developed countries expect sustainable design and are willing to pay a premium price for it, Indian consumers are still quite price concerned. Reliance strategy to provide sustainable fashion or products that are affordable to consumers. They provide the pricing of the sustainable fibre competitively with non-sustainable fibres that share the same attributes.

Green Place

It creates the place, time utilities. It is a smooth flow of goods and services from producers to consumers. Green transport uses fewer resources and has no detrimental effects on the environment.

Reliance installs vending machine at various reliance retail stores. It urges users to bring their used PET bottles to vending machines where they can receive discount coupons. These PET bottles are utilised only as a raw material to make fibre. It reduces the use of transportation for collecting PET bottles. Due to its extensive supply chain, Reliance believes in prompt product delivery to its customers. As Reliance emerged as the most sustainable firm. It has been determined that it keeps the code of conduct functional. Currently, the reliance industry is evolving towards the usage of alternative clean fuels for transportation and is following the path of advanced technology.

Green Promotion

Promotion is a means of communicating with customers about the company's goods and services. Green promotion focuses on promotion of environment friendly products, green packaging, green branding, green labeling, etc. Company promotes green product through advertisement, publicity, etc. Additionally, it attracts customers who have been influenced by a business's high standards and commitment to the environment.

Several campaigns and promotion tools utilized by reliance Recron green gold and R/Elan green gold in promoting their green gold fibre and fabric. It has started programmes that develop an integrated supply chain to meet consumer demand and raise consumer awareness. It has also launched various event, programmes and fashion show. Digital channels were also used to broadcast the event in order to emphasize the fabric of the future for the next generation. Events aid in both product determination and supply chain network visibility. Various social media platforms are utilized to market the product with motivating themes and keep consumers interested with frequent updates. E-marketing and internet marketing help in communication with consumer and offer information about green products online. Promotion through ads in newspaper and launching various programs for collecting PET bottles and through reverse vending machine, which also aware the consumers about the use of plastic bottles and influence their green purchase behaviour. Along with this, advertising at all major malls and airports and partnerships with other companies are key promotion strategies that heighten consumer excitement for product purchases.

The green marketing mix that strengthens a company's brand, image and maximizing profits is the optimum green marketing mix. It highlights the company's corporate social responsibility efforts and its adherence to ethical standards in this competitive atmosphere. Businesses that use green marketing have access to new markets and have innovative products that can increase their market share.

Beside this there is other service marketing brand also, the other three Ps make it the 7Ps marketing mix of Recron and R/Elan green gold.

People

Reliance is the one which gives employment to many people. This included the talented people that have skill and are expert in their area. Reliance introduced Recron and R/Elan Green Gold, which produced sustainable fabric. These products needed effective managerial staff, individuals who adopted new technology, and employees who helped to gather used PET bottles as raw material and turn them into sustainable fibre.

Process

Due to the company's partnerships with major suppliers and other brands, Recron and R/Elan Green Gold have one of the broadest markets in terms of both green fibre and its goods' ease of availability. Companies have effective logistics divisions and follow a speedy distribution system.

Physical Evidence

Recron green gold and R/Elan green gold try to reach every corner of the country. They typically select large establishments with a variety of stores to display. Beside this for collecting waste PET bottles they install reverse vending machine at various retail stores.

CONCLUSION

Recron and R/Elan Green Gold pioneered the push towards environmentally friendly practises and created the product using fibre derived from recycling used PET bottles by using their innovative techniques. By using a SWOT analysis, this study examines Recron and R/elan Green Gold's strengths, weaknesses, opportunities and threats. Reliance determined its corporate social responsibility and offer the fibre that is eco-sensitive in nature. The study determines that by applying green marketing mix company can influence the demand of green consumers. It also reveals that beside many opportunities company also faces many challenges in developing country like India. While customers are more aware of green products in developed countries, people in developing nations like India still need to be made aware of their advantages. Reliance adopted marketing strategies such as co- branding, green product, green labelling, green packaging, promotion, timely delivery of product that create brand image among consumers and also lead to customer satisfaction.

Through social media, the Reliance industry raises visibility and brand recognition. Using social media, businesses can better understand their target customers, current societal issues, and future marketing strategies. In order to increase publicity and gain market share in the face of rising potential competition, green companies should continue forming new alliances with entities and outside partners committed to environmental protection. To differentiate itself from many rival businesses and increase its market share in a highly competitive industry, a company must be innovative and distinctive. Opportunities for collaboration help businesses to grow their influence among consumers and making them more successful and long-lasting. For maintaining better relation with customers, marketing strategies focuses more on customer relationship management so that it creates value-based customers and can be more accepted by various textile industries. Beside this several other factors like quality, affordability, pricing, convenience influence the demand of green fibres or fabrics. Company also tries to influence the demand of non- adopters regarding green products which enhance not only the profitability of company but also create green image. As it placing more focus on media promotion regarding the benefits of green products.

SUGGESTIONS

- Customers appear to find partnerships appealing. The company has a number of supply chain partners, each of which holds a significant market share. In order to effectively promote green products, a corporation should use this technique both domestically and internationally.
- As India is second largest textile economy in world. So, government should encourage sustainable products.
- Most products are made by overseas companies using recycled materials. Therefore, industry should concentrate on finding new uses for recycled materials.
- Since today's green consumers require different marketing methods from yesterday's customers, businesses should concentrate on developing green marketing strategies.

- Industry should also build strategy to make sustainable products affordable.
- There is still need to study the green behaviour of customers regarding the green products.
- To create awareness among consumers mass movement is required through various digital means.
- A system where customers can return used goods for additional recycling is necessary. In order for the entire value chain to be cyclical.
- Value chain for sustainable products or recycling products is essential.
- Just as performance fabrics satisfy consumer needs, it is crucial that this fabric satisfies customers' demands for fashion.
- A larger need for publicity is necessary since the company must not fall short in promoting the goods.
- Beside branded products company should understand the local demand and focus on local supplier so that it reaches each and every corner of country.
- Efforts should be made to change the attitude and behaviour of consumers. Children and young people should be given preferences for purchasing green products.
- Company should focus on its customer relationship so that performance of product create satisfaction among consumers.
- Company should focus more on green advertisement or word of mouth communication so that customer can easily influence by green products.
- Green products should be displayed in a variety of supermarkets and departmental stores to influence consumer demand.
- For green start-ups, which often have a small customer base and few long-term customers, developing brand awareness and customer base is crucial.
- In order to better recognize new development prospects in the face of increasing potential competition, businesses should detect competitors using a variety of methods and pay closer attention to situational changes.

REFERENCES

[1] Alhamad, A.M., Junoh, M.Z.B.M., & Eneizan, B. (2019). Green marketing strategies: Theoretical approach. *American Journal of Economics and Business Management*, 2(2), 77-94.

[2] Bhatia, M., & Jain, A. (2013). Green marketing: A study of consumer perception and preferences in India. *Electronic Green Journal*.

[3] D'souza, C., & Taghian, M. (2005). Green advertising effects on attitude and choice of advertising themes. *Asia Pacific Journal of Marketing and Logistics*, 17(3), 51–66.

[4] Eneizan, B. (2019). Green Marketing Strategies: Theoretical Approach.

[5] Eneizan, B.M., Wahab, K.A., & Abd Wahab, K. (2016). Effect of green marketing strategy on customer satisfaction in Jordan. *Oman Chapter of Arabian Journal of Business and Management Review*, 34(3403), 1–7.

[6] Haroon, B.I. (2015). Green Promotion: a study on its impact towards the business and environmental protection. *International Journal of Accounting and Business Management*.

[7] Jaggi, G. (2012). Green Banking: Initiatives by SBI and ICICI. *Paripex Indian Journal of Research*, 3(6), 121–122. https://doi.org/10.15373/22501991/june2014/38

[8] Jeevandas, M.S., Nair, L.D., & Vivek, S. (2019). Impact of green marketing on consumer purchase intention and sustainable development. *International Journal of Innovative Technology and Exploring Engineering*, 8(6), 165–169.

[9] Maheshwari, S.P. (2014). Awareness of green marketing and its influence on buying behavior of consumers: Special reference to Madhya Pradesh, India. *AIMA Journal of Management & Research*, 8(1/4), 0974–497.

[10] Mohanty, V., & Nayak, S. (2017). Green marketing-its application, scope and future in india. *Indian Journal of Scientific Research*, 111–116.

[11] Polonsky, M.J. (2008). An introduction to green marketing. *Global Environment: Problems and Policies*, 2(1), 1–10.

[12] Saleena, T.A. (2015). SWOT Analysis in green marketing. *International Journal of Economic and Business Review*, 3(12).

[13] Sharma, D.N.K. (2015). Industry initiatives for green marketing in India. *Bus Eco J*, 7, 192.

[14] Singh, C. (2017). Green marketing: initiative in the Indian context. *Business International Journal of Advance Research and Innvovative Ideas in Education*.

[15] Singh, P., & Pandey, K. (2012). Green Marketing: Policies and Practices for sustainable development.

[16] Singh, Y. (2015). Sustainable Development Through Green Marketing-Opportunities and Challenges.

[17] Sivesan, S., Achchuthan, S., & Umanakenan, R. (2013). Green marketing practices and customer satisfaction: A special reference to leather goods. *Global journal of Management and Business research Accounting and Auditing*, 13(3), 51-59.

[18] Sohail, M.S. (2017). Green marketing strategies: how do they influence consumer-based brand equity?. *Journal for Global Business Advancement*, 10(3), 229–243.

[19] Yazdanifard, R., & Mercy, I.E. (2011, June). The impact of green marketing on customer satisfaction and environmental safety. In *International Conference on Computer Communication and Management*, Vol. 5, No. 1, pp. 637–641. IACSIT Press.

Websites

[20] https://recrongreengold.com/

[21] https://www.r-elan.com/

[22] https://www.indiantextilemagazine.in/relan-greengold-ecocean-a-sustainable-fabric-that-cares-for-our-oceans/

[23] https://www.fibre2fashion.com/news/press-release-news/india-s-ril-launches-new-sustainable-fabric-r-elan-greengold-ecocean-277668-newsdetails.htm

[24] https://www.knowde.com/stores/reliance-industries-ltd/products/r-elan-greengold

[25] www.researchgate.net

[26] www.exchange4media.com

[27] https://www.indianchemicalnews.com/sustainability/sustainable-fabric-relan-greengold-ecocean-from-reliance-11373

To Explore the Differences between Customer Behaviour and Actions in Relation to Green Products: Review of Systematic Literature, Synthesis and Future Directions

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Abstract

The study presents an outline of consumer' behavior and therefore the gap between their behavior and actions towards green. a complete of forty studies are analyzed employing a systematic review to develop a green purchase decision-making model. A thematic analysis helped within the identification of 3 major themes namely; factors moving green purchase; Theories of green purchasing behavior; and buying behavior. the priority for atmosphere knowledge, eco-labeling, environmental angle and perceived consciousness have been known as major influencers of green consumer behavior. Lack of environmental knowledge, price, perceived associated risks, structure image, trust, and temperament to pay has been identified as barriers, making a niche between behavior and actions of consumers towards green products. On the idea of analysis, a green purchase decision model has been planned and additionally potential areas of future analysis are suggested.

Keywords: *Green Purchase Behaviour, Green Products, Purchase Intentions, Eco-labeling.*

INTRODUCTION AND BACKGROUND

The environment has become a moderating factor in consumer culture over the past two decades. Because consumers are more aware of their consumption, which will affect environmental issues such as climate change, water and air pollution, depletion and overconsumption, "green products" known to have lower environmental impacts or are less harmful to human health than traditional products (Wei et al., 2017). In the modern age, green products are associated with sustainability and biodiversity. A multitude of studies show that concern for the environment has become an important aspect of individual consumption decisions and at the economic level (Dagher & Itani, 2014). Consumers can easily find green products anywhere. The rapid growth of environmentally friendly products has gone hand in hand with the marketing and promotion of these products. In order to promote green products in the market, different strategies are proposed to educate the customers about their close impact on the environment. For example, change the material or the packaging, or the label and design, or add an eco-label. Its effect on consumer behavior decision-making has been extensively

studied and researched to date (Schuitema & De Groot, 2015). Eco-labeling (also known as green labeling) has been developed and expanded in a large number of countries (e.g. United States, Singapore, India, Germany and Japan) and could be a successful tool to reduce environmental problems. Today, the role of eco-labeled products has increased and they are now seen as part of a broader environmental agenda. With a better understanding of consumer attitudes and behaviors, you will help find out and fix the problem facing environment and develop a market for green products and services (Wee et al., 2008). Consumers are appeared to be more and more inclined to purchase the green products. beacause of awareness of green products most of the companies are now producing green products that satisfy the customers need without harming our environment. These marketing practices are advocate to increased firm's value, increase performance, reduce risk and gives cost saving advantage (Arli et al., 2018). As a result of the increasing number of green consumers, marketers are targeting the green segment of the large population. Recycled paper and plastic goods are of environmental appeal and consumer's interest (Mostafa, 2007). Marketers have even also developed the specific models for the development of green advertising, green packaging, green marketing and green marketing strategies (Mostafa, 2007). Although there is evidence that the number of people willing to purchase these items has increased in recent years, there is little evidence suggesting that the buying of green goods has increased; amidst ecological issues and customers' positive feelings toward environment and green products, the share of the market of green marketing remains limited to only 1-3 percent of the total market (Joshi & Rahman, 2015). Although research indicates that certain consumer segments intend to do 'good' by planning to make pro-environmental purchase decisions (Grimmer et al., 2015). However, eco-friendly products account for less than 4 percent of market share worldwide, especially in food retailing (Guyader et al., 2016). As a result, the gap between consumer behaviour and their actions towards green products has been observed (Mishal et al., 2017). For the purpose of providing green products to fulfill customer's demands, the green products suppliers have knowledge of which kinds of attributes are, and the gaps existing between their expectations and actions. With a view to understand which kinds of attributes that customers are more inclined with and measure the gaps existing between customer's behaviour and their actions with regard to green products (Tseng & Hung, 2013). This indirect that consumers do not observe green product attribute but rather than they focus on the other attributes(such as health, quality, taste, price, brand equity). We, although asserts in this paper that consumers do consider green product attributes but they are frequently thrust to the background. In sum, the aim of this paper is to examine our assumption that consumers tend to focus on green product attributes first, followed by their actions and how this relationship depends on one's values (Schuitema & De Groot, 2015). Since earlier studies ignore the occurring changes in consumer behaviour, it is pertinent to synthesize the literature related to green consumer behaviour. this distinguishing study focusing on behaviour of consumer's and actions towards green products. Considering this, a period of study has been chosen from 2002 to 2021 with a specific focus on green consumers behaviour and their actions. Many review studies have been conducted on different aspects of green behaviour and green products as shown in table

1. It is understood that most of the review articles are focusing on green behaviour on purchase intentions and other on customer's actions towards green products.

Table 1: Condensed Review of 20 Articles on Green Behaviour and Green Products

Author's Name	*Year of Publication*	*Journal's Name*	*Citations*	*Focused Element*
(Joshi & Rahman, 2015)	June-December 2015	International strategic management review	999	This review identified prevalent motives, facilitators and barriers affecting purchase decisions
(Eze & Ndubisi, 2013)	August 2013	Journal of asian and african studies	155	To examine the factors that influence consumers' green buying behavior.
(Lee, 2008)	September 2008	Marketing intelligence and planning	1134	Factors that affect Hong kong adolescent consumers green purchasing behaviour.
(Wei, Chiang, & Lee, 2017)	July 2017	Business strategy and the environment	141	To study a gap exists between environmental concern and consumers' actual purchase behavior.
(Dagher & Itani, 2014)	May 2014	Journal of consumer behaviour	180	Four factors that may influence green purchasing behaviour were examined in this study.
(Schuitema & De Groot, 2014)	November 2014	Journal of consumer behaviour	198	A trade-off between the influence of product attributes on purchasing decisions.
(Mishal, Dubey, Gupta, & Luo, 2017)	October 2017	International journal of climate change strategies and management	99	Investigate the relationship between ECO, GPA, GPI, PCE, GRB and GPB.
(Wee, Ozanne, & Kao, 2008)	May 2008	Innovative marketing	252	Factors impacting consumers' purchasing behavior toward green products in New Zealand.
(Mostafa, 2007)	May 2007	International journal of consumer studies	837	Investigates the influence of three cognitive and attitudinal factors on gender differences.
(Abdul-Muhmin, 2007)	July 2006	International journal of consumer behaviour	291	To develop a model for explaining consumers' willingness to perform environmentally friendly behaviour.
(Grimmer, Kilbum, & Miles, 2015)	May 2016	Journal of business research	110	Analyzes whether purchase situation explains why customers' intentions.
(Zaremohzzabieh, Ismail, Ahrari, & Samah, 2021)	August 2021	Journal of business research	32	The study integrates the theory of planned behavior and the green purchase behavior model.

Author's Name	*Year of Publication*	*Journal's Name*	*Citations*	*Focused Element*
(Tseng & Hung, 2013)	November 2013	Journal of cleaner production	277	Adopt the notion of SERVQUAL instrument to develop a green product instrument for measuring these gaps.
(Kanchanapibul, Lacka, Wang, & Chan, 2013)	March 2014	Journal of cleaner production	408	Actively investigates the impact of ecologist emotion and environmental awareness.
(Chekima, 2015)	January 2016	Journal of cleaner production	344	Factors that motivate consumers' intention to purchase green products in Malaysia.
(Kautish, Paul, & Aharma, 2019)	August 2019	Journal of cleaner production	140	Environmental consciousness and recycling intentions on green purchase behavior (GPB).
(Al Mamun, Mohamad, & Yaacob, 2018)	December 2018	Journal of environmental management	109	Studied low-income individuals' behavioral control towards sustainable consumption.
(Nekmahmud & Fekete-Farkas, 2020)	September 2020	MDPI	53	This research was descriptive and conceptual framework for extending the Theory of Planned Behavior (TPB).
(Wei, Ang, & Jancenelle, 2018)	November 2018	Journal of retailing and consumer services	111	Customer participation improves consumers' willingness to pay more
(Maniatis, 2016)	September 2016	Journal of cleaner production	255	Investigates the influence of consumer's knowledge, commitment, and general awareness related to green products on their green consciouness.

OBJECTIVES OF THE STUDY

- To understand the behavioural aspects of consumers towards green products.
- To identify the gap between customers behaviour and their actions towards green products.
- To review the Determinants that are responsible for the consumer's behaviour.

RESEARCH METHODOLOGY

Selection Process

The study uses a systematic review approach that helps examine the progress and development of the subject under study and provides guidance for future research agendas. Green product, green purchase, green purchase, green attitude, green purchase intent, sustainable purchase,

and willingness to pay were used as a keyword structure to search for relevant articles published between 2002 and 2021, with Google Scholar being the main database for excerpts. The selected articles were filtered according to of the following three conditions. (1) Articles were published between 2002 and 2021. (2) The articles must be empirical in order to ensure the objectivity of the research results. (3) The main content of the research was to explore the green purchasing behavior of consumers, which includes not only consumer theory, actions and perceptions, but also influencing factors. Finally, 40 articles were selected as the main research area.

Content Analysis

Before discussing the literature, we developed detailed descriptive statistics on the 40 selected articles to further analyze the research content of each article. The content of the descriptive statistics is as follows. (1) Articles were categorized by time period, magazine, survey region, and green product category. (2) Environmental consumer purchasing factors were divided into three categories: individual factors, product and marketing factors, and social factors. The ranking can contain repetitions because an article can contain many influential decisions and insights into consumer behavior when we rank and analyze the article content.

Material Evaluation

The material analysis was divided into two forms. In the first form, specific factors and intentions of green buying behavior were categorized and summarized in three indicators:

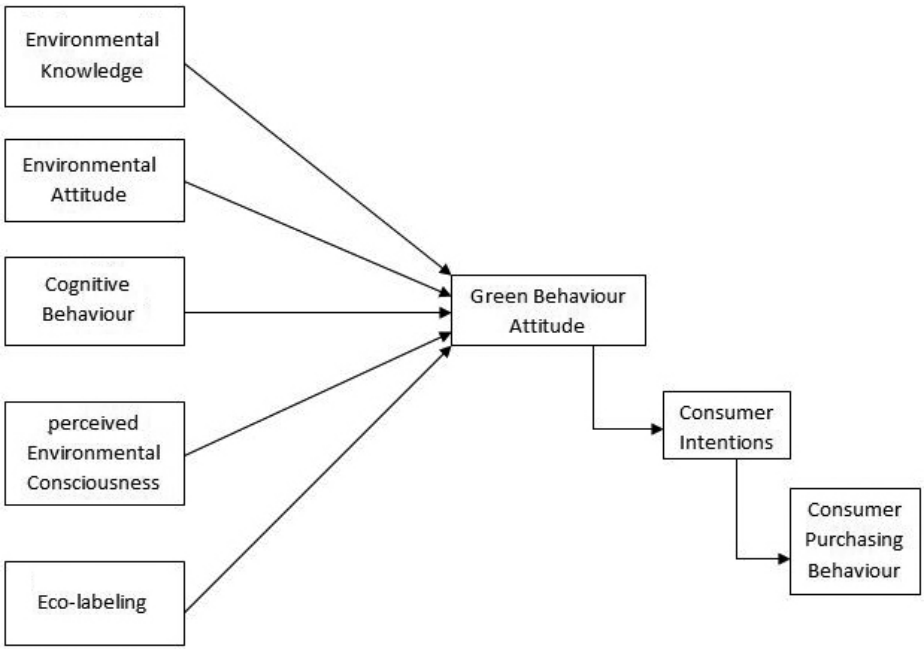


Figure 1: A Model to Identify Determinants that Affects the Consumer's Green Purchasing Behaviour

product factors, marketing factors and social factors. In the second form, based on a review of previous and related literature, we consolidate widely held consumer theories: Value-Attitude-Behavior(VAB) model Value-Norm-Belief Theory of Environmentalism (VBN), Environmentalism theory of planned behaviour (TPB) and more general models. According to the research results of the empirical articles, we talk about the influence of each variable on the green purchasing behavior. The material analysis framework of this document is shown in Figure 1.

Method of Analysis

The "Thematic Analysis" is used to extract the themes and sub-themes (Braun & Clarke, 2006). This is a popular method for qualitative data analysis with high availability and compliance. This method helps to systematically identify, organize and observe the patterns of the themes of a given research topic with a sense of collective and shared meaning (Nowell et al., 2017). To that aim, numerous data patterns might be discovered in order to obtain answers to particular problems (Braun & Clarke, 2006). Without having thorough expertise and comprehension of other qualitative approaches, a rigorous theme analysis delivers robust and incisive insights into the study field. Thematic analysis is extremely beneficial for highlighting parallels and contrasts and for generating new information in the study field. (Braun & Clarke, 2006). Accordingly, themes and sub-themes have been identified and reported.

RESULTS FROM LITERATURE REVIEW

The Results of the thematic analysis have been discussed below.

Factors Affecting the Consumer Purchasing Behaviour towards Green Products

Environmental Knowledge

Environmental knowledge can be defined as "general knowledge of facts, concepts and relationships about the natural environment and its major ecosystems". (mostafa, 2007) The most researched variable was knowledge; eighteen publications assessed customers' environmental knowledge. 15 of the 18 research discovered that consumer knowledge of environmental concerns affected customer intent and actual purchases of green items. (joshi & rahman, 2015) The positive effect of environmental knowledge is based on previous empirical findings of a direct positive connection with consumer behavior (abdul-muhmin, 2007). Environmental knowledge therefore includes people's knowledge of the environment, the key relationships that lead to environmental problems or impacts, an appreciation of 'whole systems' and the collective responsibility required for sustainable development. (mostafa, 2007) As such, environmentally conscious consumers are expected to be more likely to purchase products and services that they believe have a positive (or less negative) impact on the environment (Gan et al., 2008) As a result, consumers who consider themselves more environmentally conscious are more willing and willing to buy green products.

Environmental Attitude

Attitudes are seen as precursors to intentions, which in turn are seen as determinants of behavior. The Theory of Planned Behavior (TPB) is indeed an extension of the Theory of Reasoned Action in which "perceived behavioural control" is added as a predecessor including both purpose and behavior. (Rettie et al., 2013). Even when people express their attitude towards eco-friendly products, this may not be reflected in actual purchasing behavior as eco-friendly alternatives may not be available in all product categories. On the other hand, there are studies that indicate a positive relationship between attitude and behavior (Eze & Ndubuisi, 2013) Environmental awareness positively and indirectly influences the purchase of circular packaging through the individual tendency to obtain environmental information. In addition, a survey of Egyptian consumers found that environmental concerns were positively related to consumer purchase intent and frequency for out of eco-friendly products. (Dangelico et al., 2021) Emotions and a positive image are the fundamental impacts that build customer attitudes and influence their intention to buy green products. Research from further specifies that consumers with a positive attitude towards a particular brand tend to have stronger purchase intentions to buy the brand (Mostafa, 2007).

Cognitive Behaviour

Cognitive behavior refers to behaviors that consciously seek to minimize the negative impact of one's actions on the natural and built world (Eze & Ndubuisi, 2013). Indeed,

Table 2: Themes and Sub Themes

Themes	*Sub Themes*	*Findings*
Factors affecting green behaviour	Environmental knowledge	Environmental norms and concerns, activism, past performances, locus of control influences the green knowledge Green knowledge impacts attitude and it helps in taking more influential green purchase decisions
	Environmental attitude	Environmental consciousness, knowledge, behaviour and past purchase experiences positively influence green purchase attitude Price, attitude towards price belief and inconclusive behaviour negatively impacts the green purchase attitude. trust, perceived effectiveness, price and loyalty towards brand creates a gap in consumers behaviour and their actions.
	Cognitive behaviour	To minimize the negative impact of one's actions on the natural and built world.
	Perceived environmental consciousness	Green product consumption, perceived behavioral control have positive influence on individuals' readiness. perceived higher price for an eco-friendly product is commonly mentioned as a barrier.
	Eco labeling	To assist corporations to position themselves. consumers are often willing to pay more for eco labelled products.

Themes	*Sub Themes*	*Findings*
Theories of green behaviour	Theory of reasoned action (TRA)	Disparity may occur between consumers' attitudes and their intentions. Two main factors – individual attitude and social norms.
	Theory of planned behaviour (TPB)	Attitude toward the behavior, subjective norms and perceived behavioral control all together form behavioral intentions and behavior of an individual.
Purchasing behaviour	Purchase intentions	Consumers' willingness to purchase green products.
	Green trust	Intention to accept vulnerability based on positive expectations regarding the integrity and capability.

some studies have shown the significant influence of an individual's collectivist orientation on their recycling behavior. Propensity to seek information about green products and actual green consumption in a sample of adults (Lee, 2008). Cognitive behavioral theories focus on the process by which consumer beliefs become attitudes about certain behaviors and then lead to the execution of those behaviors. The cognitive behavioral model posits direct causal relationships between values, attitudes, intentions, and behavior, and the model has been widely applied to consumer behavior (Wei et al., 2017). Consumer innovations have a positive impact on behavioral intention to buy and use organic products. Furthermore, they found that this intention to consume green products leads to behavioral intentions to pay a premium price "green" (Dangelico et al., 2021) when a consumer decides to contribute or to contribute to the health of the environment become healthier, he or she shows a positive attitude towards environmentally friendly products, which is reflected in an environmentally friendly purchasing attitude. The term "intention" is defined as a course of action one wishes to follow, a goal, or a goal that guides an action. Green purchase intent is defined as the probability that a person intends to purchase products that do not harm society (Wei et al., 2017).

Perceived Environmental Consciousness

Perceived environmental awareness refers to the psychological factors that determine individuals' propensities for pro-environmental behavior (Mishal et al., 2017). By assuming environmental responsibility, a person seeks to behave in a way that can help repair environmental damage through individual sacrifices (Dagher & Itani, 2014). Indeed, the higher price perceived for an ecological product is often perceived as a barrier to called green consumption (Guyader et al., 2016) suggesting that perceived behavioral control should predict behavioral intention. In the context of green product consumption, perceived behavioral control will have a positive impact on individuals' willingness to be green, and green product purchase intention (Arli et al., 2007) indicated that most consumers are environmentally conscious. Previous studies also suggest that consumers who are willing to buy green products are generally eco-conscious, concerned about the environment, and believe it's important to be eco-friendly (Gan et al., 2008). This is defined as the positive emotional feelings that consumers evoke or hope to attain when they can help protect the

environment. its main hypothetical determinant is past pro-environmental behavior (Abdul-Muhmin, 2007). Consumers with positive attitudes and environmental concerns were more likely to engage in green consumer behavior than consumers who were not environmentally concerned (Zaremohzzabieh et al., 2021). In order to offer eco-friendly products that meet customer demands, green product suppliers need to know what attributes are important to customers, what their expectations and perceptions are about each attribute, and the differences between their expectations and perceptions (Tseng & Hung, 2013).

Eco-Labeling

Environmental labeling of products is an effective method of conveying to customers the unique benefits and characteristics of the product, as well as the safety claim. The information is delivered at a critical point in the customer's decision-making process. Environmental labels are shown through the use of ecologically friendly symbols or statements. Their major goal, in addition to teaching customers about the product's safety features, is to aid firms in positioning themselves as environmentally conscious enterprises (D'Souza et al., 2006). According to the poll, customers are typically willing to pay extra for eco-labeled items, and the premium they are willing to pay is influenced by factors such as their trust in the certifying body and the sort of additional information offered (Dangelico et al., 2021). Rationally, the majority of people who consider themselves to be ecologically concerned should act on their obligation by purchasing green alternatives (Dagher & Itani, 2014). An eco-label is a voluntary assertion that a product has less environmental problems due to its manufacture or usage (Gan et al., 2008). An eco-label is a voluntary assertion that a product has less environmental problems due to its manufacture or usage (Joshi & Rahman, 2015).

Theories of Green Behavior

Theory of Reasoned action (TRA)

Theory of Reasoned Action, or, as an extension, Theory of Planned Behavior In these models, there may be a mismatch between customers' views and intentions, and/or between their intentions and their actions. The majority of PECB research focuses on the first discrepancy, assuming that intention is a suitable proxy for conduct (Grimmer et al., 2015). The Theory of Planned Behavior, the expansion of Fishbein's Theory of Reasoned Action, is used in this study (TRA).This well-known theory connects behavioral intention to attitude toward the behavior (i.e., the degree to which an individual evaluates the specific behavior favorably or unfavorably), subjective norm (i.e., perceived social pressure to perform the specific behavior), and perceived behavioral control (i.e., perceived ease or difficulty of performing the specific behavior) (Arli et al., 2007). Individual behavior is governed by two major components, according to TRA: individual attitude and societal standards. TPB included a novel driver of individual actions that is known as perceived behavioural control. Perceived behavioural control refers to the perceived control over one's purchasing decisions. Many research have used TPB in order to investigate customer attitudes, intentions, and actual

purchasing behaviour in relation to green products. However, the majority of research found a poor association between customers' professed positive attitudes. The attitude–behavior gap refers to the difference between people's attitudes regarding purchasing green things and their actual purchasing behaviour. (joshi & rahman, 2015).

Theory of Planned Behaviour

The Theory of Planned Behavior is the most complete and commonly utilised theory for understanding green buying intention (TPB). According to the TPB, an individual's behavioural intentions and conduct are formed by his or her attitude toward the activity, subjective norms, and perceived behavioural control. TPB is the most often used model because it is simple and effective in predicting and explaining variance in volitional behaviour (Chekima, 2015). TPB, in turn, connects an individual's beliefs and behaviours, thereby contributing to TRA by introducing the idea of perceived behaviour control, resulting in superior findings for the purchase intention model's ability to forecast green product purchase (Dopaco et al., 2018) While TPB attempts to anticipate non-volitional actions by including the feeling of control or regulation over the activity as a predictor of both intention and behaviour (Ajzen,1991).

Purchasing Behaviour

Purchasing Intentions

Green purchasing intention or willingness (GPI) refers to customers' declared readiness to buy eco-friendly items for the benefit of the environment and so forth consumers' willingness carries motive to purchase green items (Jaiswal & Kant, 2017). Each consumer has diverse preferences for different aspects of an eco-friendly product, and it is difficult to match green consumer traits with customer demographic factors. Furthermore, the shifting attitudes of environmentally conscious consumers have made it challenging for marketers to promote green products (Panda et al., 2019). In general, an individual's intents are decided by a variety of personal and influential ideas, thus his or her behaviours are simple to carry out. Individuals plan to do the task when the influence of subjective norm and attitude on action is affirmative, with significant perceived control (Mamun et al., 2018). Many research in marketing and consumer behaviour have demonstrated subjective norm as a major factor of intention, including participation intention (Paul et al., 2015).

Green Trust

Green trust is defined as customers' readiness to rely on an object based on their belief or expectation that it is credible, kind, and environmentally responsible. Trust is the willingness to tolerate vulnerability based on favourable perceptions about another's integrity and capabilities. Consumers will have a more favourable attitude toward green products if they believe the corporations making claims about the greenness of their items (Wei et al., 2017). In one study, green trust was found to impact the effect of green perceived value and environmentally perceived risk, the two determinants of green purchase intention (Chen et al.,

2012). As a result, it is possible to argue that a lack of customer trust in green products works as a barrier to green purchasing behaviour (Joshi & Rahman, 2015). Green products should be generated via true ecological innovation, with appropriate evidence of their environmental advantages and value propositions to end customers (Maniatis, 2016).

DISCUSSION

The primary goal is to discover and understand the important influencing elements in green purchasing behaviour, as well as their respective actions and relative importance. The findings indicate that consumers care about the environment and that their shopping habits reflect their environmental opinions. In this study, the finding on the crucial role of attitude was overwhelmingly favourable for green products. Green purchase intention effects green purchasing behaviour as well. Attitudes toward conduct are the best indicators of the intention to purchase green items. According to this study, customers' inclination to purchase green products is impacted by their positive attitude toward green products. Our findings demonstrate that, as predicted, customers with little environmental awareness are reluctant to spend extra for green items, which is consistent with past research. That is, concerned consumers are more willing to pay more for green products, but not because they believe their actions will have a significant impact; they exhibit pro-environmental behaviours because they care about the environment, not because they believe their actions will have a significant impact on environmental issues. Similar to a prior study, collectivism had the strongest association with subjective standards (Sreen et al., 2017). Despite the fact that a few academics have examined the factors influencing the antecedents of buying intentions and purchase behaviour for green products through the mediation function of attitude (Jaiswal & Kant, 2017). This study validated the usefulness of an extended TPB as a research model beneficial for explaining consumers' green product purchase intentions and verifies the assertion that if attitude and perceived behavioural control are favourable, customers are more likely to have green product buy intentions. Another key topic raised by our research is whether or not there is a substantial link between customer behaviour and their actions toward green products. As in earlier studies, customer behaviour was positively impacted by their activities (Justin, Modi, & Patel, 2015). Furthermore, eco-label and green buying intention are favourably related. This is consistent with prior research that found eco-labels to be a motivator for green purchasing behaviour. Eco-labels, according to researchers, provide an educational foundation that boosts customers' familiarity and favourable opinion of green products over conventional ones. This supports previous comments and claims in the literature, in which marketers recognised label as a strategic instrument for attracting purchasers in the marketplace. The use of a label in green marketing, often known as eco-labeling (Chekima et., al 2015). These theoretical evolutions might be seen as very early efforts to delve deeply into green consumers' cognitive frameworks while dealing with green information and knowledge. More study is needed in this area so that richer frameworks for understanding green customers' behaviours and decision-making may be built.

CONCLUSION AND FUTURE RESEARCH AGENDA

This study began with the goal of determining the influence of social and environmental knowledge, environmental attitude, cognitive behaviour, eco-labeling intention, and customer perceived environmental consciousness on green purchase intentions and consumer purchasing behaviour. Green customers pick green products because they are concerned about environmental advantages, economic benefits, product reliability, and product aesthetics. The study adds to the theory by offering new insights into the elements that impact green purchasing behaviours, specifically the role of prosocial views. In terms of the latter, certain consumers will display the features and attitudes examined in this study; marketing strategies should evaluate all elements impacting purchasing behaviour in order to target the market. As a result, more study using the TRA/TPB model and incorporating a few more components in connection to other sites inside or beyond the nation is proposed for greater representativeness of different age groups. Finally, because the respondents' activities were not observed in this study. In the future, panels or scanning behaviour data can be used to address the inaccurate notion of behaviour follows intentions.. As a result, future researchers should use a longitudinal strategy in their research, focusing on changes in consumer purchasing behaviour over time. For instance, this study concentrated on a broad product area, such as green items. Green products are further broken into sub-product categories such as organic food, green electrical equipment, and so on. Further research on a specific product category may be conducted, and the influence of variables addressed in this study can be explored for subcategories of green products. Second, more exogenous factors such as environmental concern, self-identity, consumers' egoistic values, and personal values can be included in this study. This may offer practitioners with a clearer image for adopting initiatives. Finally, just one moderator variable, Gender, was evaluated in this study. More moderator factors, such as age, income, and education, might be studied further. Fourth, this study may be used to do cross-sectional research between two nations, such as China and India or the United States and India. This research can assist practitioners recognize cultural variations and suggest various ways to success in such locations. Finally, a longitudinal research may be conducted to determine the influence of cultural shifts on customer purchasing intentions over time.

REFERENCES

[1] Abdul-Muhmin, A.G. (2007). Explaining consumers' willingness to be environmentally friendly. *International Journal of Consumer Studies*, *31*(3), 237–247.

[2] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

[3] Al Mamun, A., Mohamad, M.R., Yaacob, M.R.B., & Mohiuddin, M. (2018). Intention and behavior towards green consumption among low-income households. *Journal of Environmental Management*, *227*, 73–86.

[4] Arli, D., Tan, L.P., Tjiptono, F., & Yang, L. (2018). Exploring consumers' purchase intention towards green products in an emerging market: The role of consumers' perceived readiness. *International Journal of Consumer Studies*, *42*(4), 389–401.

[5] Biswas, A., & Roy, M. (2015). Green products: an exploratory study on the consumer behaviour in emerging economies of the East. *Journal of Cleaner Production*, *87*, 463-468.

[6] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101.

[7] Chaudhary, R., & Bisai, S. (2018). Factors influencing green purchase behavior of millennials in India. *Management of Environmental Quality: An International Journal*.

[8] Chekima, B., Wafa, S.A.W.S.K., Igau, O.A., Chekima, S., & Sondoh Jr, S.L. (2016). Examining green consumerism motivational drivers: Does premium price and demographics matter to green purchasing?. *Journal of Cleaner Production*, *112*, 3436-3450.

[9] Choi, D., & Johnson, K.K. (2019). Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. *Sustainable Production and Consumption*, *18*, 145-155.

[10] Dagher, G.K., & Itani, O. (2014). Factors influencing green purchasing behaviour: Empirical evidence from the Lebanese consumers. *Journal of Consumer Behaviour*, *13*(3), 188-195.

[11] Dangelico, R.M., Nonino, F., & Pompei, A. (2021). Which are the determinants of green purchase behaviour? A study of Italian consumers. *Business Strategy and the Environment*, *30*(5), 2600-2620.

[12] D'Souza, C., Taghian, M., Lamb, P., & Peretiatkos, R. (2006). Green products and corporate strategy: an empirical investigation. *Society and Business Review*.

[13] do Paço, A., Shiel, C., & Alves, H. (2019). A new model for testing green consumer behaviour. *Journal of Cleaner Production*, *207*, 998-1006.

[14] Eze, U.C., & Ndubisi, N.O. (2013). Green buyer behavior: Evidence from Asia consumers. *Journal of Asian and African Studies*, *48*(4), 413-426.

[15] Gan, C., Wee, H.Y., Ozanne, L., & Kao, T.H. (2008). Consumers' purchasing behavior towards green products in New Zealand. *Innovative Marketing*, *4*(1).

[16] Grimmer, M., Kilburn, A.P., & Miles, M.P. (2016). The effect of purchase situation on realized pro-environmental consumer behavior. *Journal of Business Research*, *69*(5), 1582-1586.

[17] Guyader, H., Ottosson, M., & Witell, L. (2017). You can't buy what you can't see: Retailer practices to increase the green premium. *Journal of Retailing and Consumer Services*, *34*, 319-325.

[18] Jaiswal, D., & Kant, R. (2018). Green purchasing behaviour: A conceptual framework and empirical investigation of Indian consumers. *Journal of Retailing and Consumer Services*, *41*, 60-69.

[19] Joshi, Y., & Rahman, Z. (2015). Factors affecting green purchase behaviour and future research directions. *International Strategic Management Review*, *3*(1-2), 128-143.

[20] Joshi, Y., & Rahman, Z. (2016). Predictors of young consumer's green purchase behaviour. *Management of Environmental Quality: An International Journal*.

[21] Kanchanapibul, M., Lacka, E., Wang, X., & Chan, H.K. (2014). An empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production*, *66*, 528-536.

[22] Kautish, P., Paul, J., & Sharma, R. (2019). The moderating influence of environmental consciousness and recycling intentions on green purchase behavior. *Journal of Cleaner Production*, *228*, 1425-1436.

[23] Lee, K. (2008). Opportunities for green marketing: Young consumers. *Marketing Intelligence & Planning*.

[24] Lobo, A., & Greenland, S. (2017). The influence of cultural values on green purchase behaviour. *Marketing Intelligence & Planning*.

[25] Maniatis, P. (2016). Investigating factors influencing consumer decision-making while choosing green products. *Journal of Cleaner Production*, *132*, 215-228.

[26] Mishal, A., Dubey, R., Gupta, O.K., & Luo, Z. (2017). Dynamics of environmental consciousness and green purchase behaviour: An empirical study. *International Journal of Climate Change Strategies and Management*.

[27] Mostafa, M.M. (2007). Gender differences in Egyptian consumers' green purchase behaviour: the effects of environmental knowledge, concern and attitude. *International Journal of Consumer studies*, *31*(3), 220-229.

[28] Nowell, L.S., Norris, J.M., White, D.E., & Moules, N.J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1609406917733847.

[29] Panda, T.K., Kumar, A., Jakhar, S., Luthra, S., Garza-Reyes, J.A., Kazancoglu, I., & Nayak, S. S. (2020). Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism. *Journal of Cleaner production*, *243*, 118575.

[30] Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, *29*, 123–134.

[31] Rettie, R., Burchell, K., & Barnham, C. (2014). Social normalisation: Using marketing to make green normal. *Journal of Consumer Behaviour*, *13*(1), 9–17.

[32] Schuitema, G., & De Groot, J.I. (2015). Green consumerism: The influence of product attributes and values on purchasing intentions. *Journal of Consumer Behaviour*, *14*(1), 57-69.

[33] Sharma, A., & Foropon, C. (2019). Green product attributes and green purchase behavior: A theory of planned behavior perspective with implications for circular economy. *Management Decision*.

[34] Sharma, A. P. (2021). Consumers' purchase behaviour and green marketing: A synthesis, review and agenda. *International Journal of Consumer Studies*, *45*(6), 1217-1238.

[35] Sreen, N., Purbey, S., & Sadarangani, P. (2018). Impact of culture, behavior and gender on green purchase intention. *Journal of Retailing and Consumer Services*, *41*, 177-189.

[36] Suki, N. M. (2016). Green product purchase intention: Impact of green brands, attitude, and knowledge. *British Food Journal*.

[37] Tseng, S.C., & Hung, S.W. (2013). A framework identifying the gaps between customers' expectations and their perceptions in green products. *Journal of Cleaner Production*, *59*, 174-184.

[38] Wei, C.F., Chiang, C.T., Kou, T.C., & Lee, B.C. (2017). Toward sustainable livelihoods: Investigating the drivers of purchase behavior for green products. *Business Strategy and the Environment*, *26*(5), 626–639.

[39] Wei, S., Ang, T., & Jancenelle, V.E. (2018). Willingness to pay more for green products: The interplay of consumer characteristics and customer participation. *Journal of Retailing and Consumer Services*, *45*, 230–238.

[40] Zaremohzzabieh, Z., Ismail, N., Ahrari, S., & Samah, A.A. (2021). The effects of consumer attitude on green purchase intention: A meta-analytic path analysis. *Journal of Business Research*, 132, 732-743.

From Fashion to Responsibility: Unveiling Consumer Awareness Towards Sustainable Clothing

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ABSTRACT

Background: *With the increasing awareness of the climate crisis, sustainability has gained significant importance as people recognize the long-term impact of their actions on future generations. Fashion consumers have the power to drive positive changes in societies worldwide.*

Purpose: *This research aims to examine the awareness and attitude of consumers (aged 16 and above) towards purchasing sustainable clothes. The goal is to gain insights into their preferences and choices.*

Method: *The research adopts an exploratory approach using quantitative data collected through a questionnaire with individuals in Gurugram. The findings were analyzed using the Chi-square test.*

Conclusion: *The results indicate that the surveyed cohort genuinely cares about the climate and the future of the planet, which influences their attitudes. While there is a positive inclination towards purchasing sustainable fashion products, there exists a gap between this awareness and actual consumer behavior.*

Keywords: *Sustainable Clothing, Awareness, Purchase Intention.*

INTRODUCTION

Over the years, rising consumer demand and consumption levels have driven businesses to develop technologies enabling mass production. However, in pursuit of profit maximization and meeting growing demand many businesses have overlooked the environmental consequences of their actions and treated resources as limitless. As we consume goods and services, our actions have an impact on the environment. Our consumption patterns contribute to the depletion of both renewable and nonrenewable resources. Additionally, the excessive waste generated from our consumption becomes difficult to manage, and harmful substances are released into the air, water, and land. During the 20th century, people's relationship with clothing has undergone significant changes. However, the most drastic shift occurred in the last two decades of the 21st century. During this time, there has been a rise in excessive production and consumption, leading many individuals to engage in a thoughtless cycle of

acquiring and discarding garments rather than appreciating and fully utilizing them. Due to the rapid pace of consumption habits, consumers often find themselves overwhelmed, both physically and mentally. This has resulted in a major waste management issue that affects communities and economies. The problem extends beyond the challenge of waste disposal in landfills, as it also involves the squandering of valuable resources such as water, energy, labor, and time that go into the production of garments. In addition, significant amounts of money are wasted when these items are easily discarded. According to consumer surveys, India is projected to become one of the largest markets for sustainable fashion by 2030. As the Indian market sees an influx of synthetic textile fibers, businesses that prioritize natural fibers, such as cotton, have a higher chance of gaining recognition. 76% of Indian consumers show greater loyalty towards brands that offer clothing made from natural fibers. This presents a significant opportunity to study the current trends and practices in sustainable and eco-friendly textiles and clothing in India. (Euro International 2016)

THEORETICAL BACKGROUND AND LITERATURE REVIEW

The concept of "sustainable fashion" is a relatively recent development. While the idea of sustainability had been discussed for many years, it was only in the early 1990s that designers and innovators began challenging the fashion industry's traditional norms. They started exploring alternative approaches to clothing production and consumption, breaking away from the established archetype. This shift marked the beginning of a new era in fashion that prioritized sustainability and its environmental impact. There currently needs to be a widely accepted industry standard for sustainable fashion, making it difficult to define. Lundblad and Davies (2016) highlighted this challenge. According to Heinze (2020) sustainable fashion involves using environmentally friendly materials in the manufacturing process of clothing and promoting transparency in supply chains. Clark (2008) describes sustainable fashion as slow fashion, which not only focuses on producing garments at a slower pace than fast fashion but also emphasizes the environmental impact throughout the entire ecosystem of garment production, in addition to considering manufacturing and supply chain aspects. Cervellon et al. (2010) argue that consumption factors such as use, reuse, and disposal should be taken into account as they significantly impact the sustainability of fashion products. They use the term eco-fashion to refer to sustainable fashion. They view sustainable fashion as a broad term that includes various interchangeable definitions, such as ethical, organic, green, recycled, and reused fashion.The term "sustainable fashion" is often used interchangeably with various other terms such as "eco-fashion", "green fashion", "ethical fashion", or "slow fashion" (Khandual & Pradhan, 2019), Tryphena& Aram, (2023) describes. In India, there are several sustainable fashion brands that can be categorized based on different criteria such as the use of organic fabric, zero waste practices, ethical production methods, and upcycled fashion. Some notable sustainable fashion brands in India include Ethicus, Nicobar, Doodlage, I Was a Saree, No Nasties, and Upasana. These brands often have their own e-commerce websites and actively promote their products through social media platforms.Sustainable clothing is an important

part of Sustainable fashion. Over the past decade, clothing retailers have acknowledged the significance of sustainability as a crucial concern. There has been a growing consumer demand for products that are both environmentally and socially sustainable (Joergens, 2006). Sustainable clothing is commonly associated with being environmentally friendly. However, the scope of sustainability is much broader, covering various aspects such as fair production practices, economic viability and growth, and consumers' responsible spending habits and desire for diversity. When we talk about sustainable fashion, it means designing garments that can be safely returned to the environment and reused. Production processes should prioritize sustainability and avoid causing harm to the environment. The focus should be on creating products that cater to the needs of users rather than solely benefiting the producers. It is crucial to consider the interdependent relationship between consumers and producers, as well as the subjective perspective that allows clothing to hold value within families even after production (Fletcher, 2008). It is defined by Goworkek et al. (2012) as Clothing "which incorporates one or more aspects of social and environmental sustainability or more aspects of social and environmental sustainability."

India Sustainable Clothing Landscape

After agriculture, the fashion industry is one of the largest employers in India. It directly employs over 45 million people and indirectly employs another 60 million in related sectors. India is known globally as a manufacturing and technology hub, making it well-positioned to leverage digital technologies in fashion production and consumption. The COVID-19 pandemic has disrupted fashion supply chains leading to increased adoption of digital technologies in the industry. India has a rich heritage of producing exquisite garments, including sari, banarasi, patola, kanchiwaram, and phulkari. Since the economic liberalization of the Indian economy in 1990, Indian designers have gained international recognition for their successful products. India produces 95% of the world's handmade textiles and is the second-largest exporter of textiles and clothing. Since June 2019, there has been a significant 50% increase in exports of cotton yarn, fabrics, and handloom products from India. The fashion industry operates on a linear production model known as fast fashion, which involves extracting natural resources, producing clothes at low cost, and disposing of them quickly. This approach has raised concerns about its negative impact on both people and the environment. According to a report, By 2030, global apparel consumption is expected to increase by 63%, resulting in a significant rise in resource consumption and waste generation. This growth translates to an additional 500 billion T-shirts or the equivalent of 102 million tonnes of clothing. The fashion industry is a major contributor to carbon emissions, accounting for approximately 4% of the total global emissions. According to the McKinsey report, If current trends continue, it is projected that the industry will emit 2.1 billion tonnes of CO2 by 2030. To align with the target of limiting global warming to 1.5ºC, emissions should not exceed 1.1 billion tonnes CO2e by 2030. This challenge is amplified by the fact that a significant portion of clothing production takes place in countries like China, India, and Bangladesh, which heavily rely on coal, a highly polluting

fossil fuel. According to Eileen Fisher, a well-known fashion designer and environmental award recipient, the clothing industry holds the dubious distinction of being the second-largest polluter globally, trailing only behind the oil industry (Sweeny, 2015).

Sustainable Design Techniques

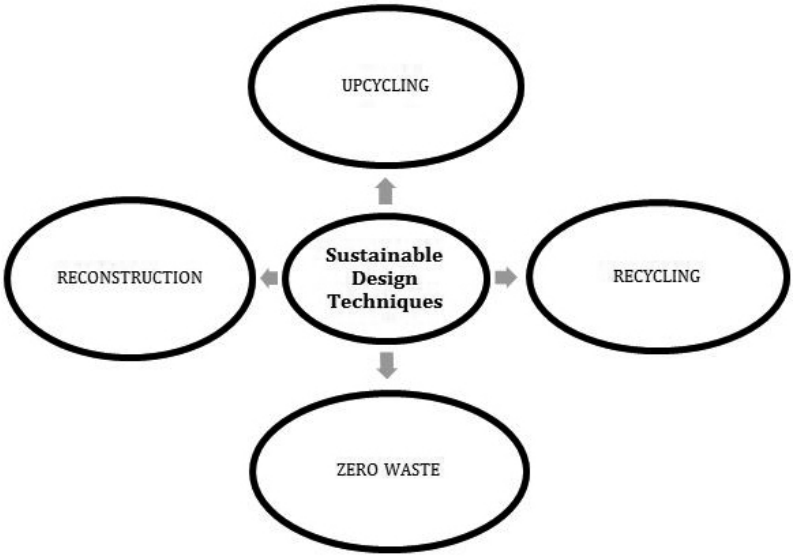


Figure 1: Sustainable Design Techniques

Upcycling is the process of transforming discarded items into products with increased functionality, aiming to reduce waste. Recycling, on the other hand, typically involves chemically reconstructing materials to create new products. (Green Empowerment 2016) Reconstruction, a type of upcycling, involves dismantling previously worn or finished garments and reconstructing them into new designs. Zero-waste design techniques, such as zero-waste pattern cutting, draping, smocking, and plaiting, are employed to minimize waste during the design stage (Khandual & Pradhan, 2019).

OBJECTIVES OF THE STUDY

- To analyze the association between demographics and awareness towards sustainable clothing.
- To examine the correlation between awareness and purchase intention of sustainable clothing

METHODOLOGY OF THE STUDY

The research paper is based on primary data collected through a questionnaire method distributed using social media platforms. 142 responses were collected from the concerned method. Chi-Square test was used to achieve the objectives of the study.

HYPOTHESIS OF THE STUDY

H_0 There is no significant association between gender and consumer awareness.
H_1 There is a significant association between gender and consumer awareness.
H_{0a} There is no significant association between age and consumer awareness.
H_{1a} There is a significant association between age and consumer awareness.
H_{0b} There is no significant association between educational qualification and consumer awareness.
H_{1b} There is a significant association between educational qualification and consumer awareness.
H_{0c} There is no significant association between consumer's awareness and purchase intention.
H_{1c} There is no significant association between consumer's awareness and purchase intention.

RESULTS AND DISCUSSIONS

- **There is no significant association between gender and consumer awareness.**

	(a) Pearson Chi-Square	*(b) Likelihood Ratio*	*(c) Linear-by-Linear Association*	*(d) No. of Valid Cases*
Value	6.830[a]	6.977	.618	142
D.o.f	2	2	1	
Sig. Value	.033	.031	.432	

Interpretation: The chi-square analysis reveals a significant association between gender and consumer awareness ($\chi^2 = 6.830$, df = 2, p = .033). Since the p-values for the Pearson Chi-Square is less than 0.05, indicates that there is a significant association between gender and consumer awareness.

- **There is no significant association between age and consumer awareness.**

	(a) Pearson Chi-Square	*(b) Likelihood Ratio*	*(c) Linear-by-Linear Association*	*(d) No. of Valid Cases*
Value	9.528[a]	9.560	.059	142
D.o.f	4	4	1	
Sig. Value	.049	.048	.809	

Interpretation: The p-values for both the Pearson Chi-Square and the Likelihood Ratio tests are less than 0.05, which indicates a significant association between age and consumer awareness. This shows that age is likely to have an impact on consumer awareness.

- **There is no significant association between educational qualification and consumer's awareness.**

	(a) Pearson Chi-Square	*(b) Likelihood Ratio*	*(c) Linear-by-Linear Association*	*(d) No. of Valid Cases*
Value	22.768[a]	26.998	.372	142
D.o.f	4	4	1	
Sig. Value	.000	.000	.542	

Interpretation: The chi-square analysis revealed a significant association between educational qualification and consumer awareness ($\chi^2 = 22.768$, df = 4, $p < .005$). The likelihood ratio chi-square test also supported this finding ($\chi^2 = 26.998$, df = 4, $p < .005$). These results suggest that educational qualification has a significant influence on consumer awareness, but the relationship may not follow a clear linear pattern.

- **There is no significant association between consumer awareness and purchase intention.**

	(a) Pearson Chi-Square	*(b) Likelihood Ratio*	*(c) Linear-by-Linear Association*	*(d) No. of Valid Cases*
Value	166.725[a]	81.105	53.142	142
D.o.f	4	4	1	
Sig. Value	.000	.000	.542	

Interpretation: The chi-square analysis revealed a significant association between awareness towards sustainable clothing and the intention to purchase sustainable clothing ($\chi^2 = 65.725$, df = 4, $p < .001$). The likelihood ratio chi-square test also supported this significant association ($\chi^2 = 81.105$, df = 4, $p < .001$). Additionally, the linear-by-linear association test showed a significant linear trend ($\chi^2 = 53.142$, df = 1, $p < .001$), indicating that as familiarity with sustainable clothing practices increased, the likelihood of considering purchasing sustainable clothing in the future also increased.

CONCLUSION

It can be concluded that several significant findings emerged from the association between awareness of sustainable clothing and the intention to purchase sustainable clothing. the results revealed a significant association between educational qualification and consumer awareness of sustainable clothing. This suggests that individuals with higher levels of education are more likely to be aware of sustainable clothing practices. This finding emphasizes the importance of education in promoting sustainable fashion choices and highlights the need for targeted educational campaigns to raise awareness among the public. Secondly, age was found to have a significant association with consumer awareness of sustainable clothing. Specifically, the study indicated that younger individuals tend to have higher levels of awareness in this domain. This finding suggests that younger generations are more conscious of the environmental and social impact of their purchasing decisions, leading to greater awareness

of sustainable clothing options. Lastly, the study found a significant association between gender and consumer awareness of sustainable clothing. Although the specific details of this association need further investigation, this finding indicates that gender plays a role in shaping awareness levels. Understanding the underlying factors contributing to this association could assist in developing targeted strategies to promote sustainable clothing practices among both men and women. Overall, these findings highlight the importance of consumer awareness in driving the intention to purchase sustainable clothing. By recognizing the influence of educational qualification, age, and gender on consumer awareness, businesses, marketers, and educators can develop effective strategies to promote sustainable fashion practices. Encouraging educational initiatives, tailoring marketing campaigns to different age groups, and considering gender-specific factors can enhance consumer awareness, leading to increased intention to purchase sustainable clothing and a more sustainable fashion industry.

REFERENCES

[1] Cervellon, M.-C., Hjerth, H., & Ricard, S. (2010). Green in fashion? An exploratory study of national differences in consumers' concern for eco-fashion. *Proceedings of 9th International Marketing Trends Conference, Venice*. http://researchonline.gcu.ac.uk/cbs/148

[2] Clark, H. (2008). Slow + Fashion – An Oxymoron – or a Promise for the Future...? *Fashion Theory*, 12(4), 427–446. https://doi.org/10.2752/175174108X346922

[3] Fletcher, K. (2008). Sustainable fashion & textiles—Design journeys. Earthscan: London.

[4] Goworek, H., Fisher, T., Woodward, S. and Hiller, A. (2012). The sustainable clothing market: an evaluation of potential strategies for UK retailers. *International Journal of Retail & Distribution Management*, 40(12), 935–955.

[5] Heinze, L. (2020). Fashion with heart: Sustainable fashion entrepreneurs, emotional labor and implications for a sustainable fashion system. *Sustainable Development* (Bradford, West Yorkshire, England), 28(6), 1554-1563. https://doi.org/10.1002/sd.2104

[6] Joergens, C. (2006). Ethical fashion: Myth or future trend. *Journal of Fashion Marketing and Management*,10(3), 360–371.

[7] Khandual, A., & Pradhan, S. (2019). Fashion brands and consumers approach towards sustainable fashion. In S.S. Muthu (Ed.), *Fast Fashion, Fashion Brands and Sustainable Consumption, Textile Science and Clothing Technology*, 37–54. Springer Nature Singapore Pvt. Ltd. Retrived from https://doi.org/10.1007/978-981-13-1268-7_3

[8] Lundblad, L., & Davies, I.A. (2016). The values and motivations behind sustainable fashion consumption. *Journal of Consumer Behavior*, 15(2), 149–162. https://doi.org/10.1002/cb.1559.

[9] Ravichander V. Fashion designers who are keeping Indian textiles alive and kicking. Available from: < http://www.craftsvilla.com/blog/fashion-designersindian-textiles/> [August 20, 2016]

[10] Sweeny, G. (2015). Fast fashion is the second dirtiest industry in the world, next to big oil. *EcoWatch*. Retrieved from http://ecowatch.com/2015/08/17/fast-fashion-second-dirtiestindustry/

[11] Tryphena, R., & Aram, I. A. (2023). Consumer perception on sustainable clothing among urban Indians. *Journal of Engineered Fibers and Fabrics*, 18, 15589250231168964.

[12] https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/full-report.html

[13] https://www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

Examining the Use of Green Marketing Techniques Used by FMCG Companies

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Abstract

The growing concern for environmental sustainability and increased consumer awareness of ecological issues has led to a significant shift in consumer preferences towards environmentally-friendly products. As a response, Fast-Moving Consumer Goods (FMCG) companies have adopted green marketing techniques to showcase their commitment to sustainable practices and capture the eco-conscious consumer market. This research paper aims to explore the use of green marketing techniques employed by FMCG companies, their impact on consumers' purchasing behavior, and the challenges and opportunities associated with implementing such strategies. By analyzing case studies and existing literature, this paper highlights the importance of integrating eco-friendly initiatives into FMCG marketing campaigns for long-term success in the dynamic business landscape.

Keywords: *Green Marketing, Techniques, Environmental, Consumer, Product, Eco-friendly, Brand.*

INTRODUCTION

Green marketing, also known as environmental marketing or sustainable marketing, is a strategic approach adopted by businesses to promote products and services that are environmentally friendly and socially responsible. It emerged as a response to the escalating concerns surrounding environmental degradation, climate change, and the depletion of natural resources. Green marketing seeks to align corporate practices and consumer behavior with sustainable principles, addressing the pressing need for businesses to contribute positively to the planet's well-being (Solaiman et al., 2015).

Over the past few decades, the global awareness of environmental issues has grown significantly, leading consumers to become increasingly conscious of their purchasing decisions. Consumers now seek products and services that minimize their ecological footprint and support responsible business practices. Consequently, companies across various industries, especially those in the Fast-Moving Consumer Goods (FMCG) sector, have recognized the importance of integrating sustainability into their core values and marketing strategies.

The concept of green marketing goes beyond simply promoting products as eco-friendly; it encompasses a broader spectrum of practices and principles. This marketing approach encompasses eco-friendly product development, sustainable sourcing, responsible packaging,

energy-efficient operations, and transparent communication with consumers. By adopting green marketing practices, companies not only aim to attract environmentally conscious consumers but also demonstrate their commitment to environmental preservation and social responsibility, which can improve their brand reputation and foster long-term customer loyalty.

The primary objective of green marketing is to create a win-win situation where businesses can thrive while contributing positively to environmental sustainability. For companies, adopting green marketing techniques can lead to reduced operational costs through resource efficiency, access to new markets, enhanced brand image, and compliance with emerging environmental regulations. At the same time, consumers benefit by gaining access to eco-friendly products that align with their values, contributing to a more sustainable future for the planet.

However, green marketing is not without its challenges. One major obstacle is the risk of "greenwashing," where companies exaggerate or falsely claim their products as environmentally friendly, leading to consumer skepticism and trust issues. Additionally, balancing sustainability with affordability and product performance is another common challenge that companies face in green marketing initiatives.

This research paper delves into the realm of green marketing, exploring the various techniques used by FMCG companies to promote sustainability and how these strategies impact consumer behavior. It also highlights the challenges and opportunities faced by companies in implementing green marketing practices. By understanding the significance and complexities of green marketing, businesses can make well-informed decisions to integrate environmental responsibility into their marketing efforts, ultimately contributing to a more sustainable and eco-conscious global economy (Sohail, M. Sadiq. 2017).

FAST-MOVING CONSUMER GOODS (FMCG) COMPANIES

Fast-Moving Consumer Goods (FMCG) companies, also known as consumer packaged goods (CPG) companies, are entities that produce and distribute everyday consumer products that have a relatively short shelf life and are sold at a relatively low cost. These products are considered essential and are in high demand, leading to frequent and rapid turnover in the market. FMCG companies play a crucial role in meeting the day-to-day needs of consumers and are an integral part of the consumer goods industry.

Characteristics of FMCG Companies

1. **Product Range:** FMCG companies produce a wide range of products that cater to various aspects of consumers' daily lives. These products typically include food and beverages, personal care items, household cleaning products, toiletries, and other everyday necessities.
2. **High Volume and Low Margins:** FMCG products are often sold in large quantities due to their high demand, but the profit margins on individual products tend to be relatively low. The business model relies on selling a large volume of products to maintain profitability.

3. **Branding and Marketing:** Brand recognition and effective marketing strategies are crucial for FMCG companies to stand out in a competitive market. Strong branding and targeted advertising help build consumer trust and loyalty.
4. **Distribution Network:** FMCG companies need a well-established and efficient distribution network to ensure their products reach consumers quickly and consistently. This often involves partnerships with retailers, wholesalers, and distributors.
5. **Consumer Focus:** FMCG companies are highly consumer-oriented, constantly seeking to understand consumer preferences, buying habits, and evolving needs to develop products that resonate with their target audience.

Examples of FMCG Companies

1. **Procter & Gamble (P&G):** A multinational company that produces a wide range of personal care and household products, including brands like Tide, Pampers, Gillette, and Pantene.
2. **Unilever:** A global consumer goods company with a diverse portfolio, offering products such as Dove, Lipton, Knorr, and Axe.
3. **Nestlé:** A leading food and beverage company known for brands like Nescafé, KitKat, Maggi, and Purina.
4. **The Coca-Cola Company:** Known for its iconic beverage products, including Coca-Cola, Sprite, Fanta, and Dasani.
5. **PepsiCo:** A multinational food and beverage company producing popular brands like Pepsi, Lay's, Gatorade, and Quaker.
6. **Johnson & Johnson:** A company specializing in pharmaceuticals, medical devices, and consumer healthcare products like Band-Aid, Neutrogena, and Johnson's Baby.
7. **Colgate-Palmolive:** Known for oral care and personal care products, including Colgate toothpaste, Palmolive soap, and Hill's pet nutrition.

Significance of FMCG Companies

FMCG companies play a vital role in the global economy due to their wide-reaching consumer base and the essential nature of their products. They contribute significantly to employment and economic growth in various regions, both in manufacturing and distribution. The competitive nature of the FMCG sector drives companies to innovate and improve products continually, benefiting consumers with better-quality goods and greater convenience. Additionally, FMCG companies' efforts in adopting sustainable and eco-friendly practices can have a substantial positive impact on the environment and society at large.

GREEN MARKETING TECHNIQUES

Green marketing techniques are strategies and practices employed by businesses to promote their products or services as environmentally friendly, sustainable, and socially responsible.

These techniques aim to appeal to the growing segment of environmentally conscious consumers and demonstrate the company's commitment to environmental preservation. By incorporating green marketing techniques, businesses can enhance their brand image, attract eco-conscious consumers, and contribute to a more sustainable future (Tawani, A., & Agrawal, N. 2016). Here are some common green marketing techniques:

1. **Eco-Friendly Packaging:** Companies use biodegradable, recyclable, or compostable packaging materials to reduce waste and minimize the environmental impact of their products. They may also adopt lightweight packaging to reduce transportation-related carbon emissions.
2. **Sustainable Sourcing:** Businesses emphasize sourcing raw materials from eco-friendly and sustainable sources, such as responsibly managed forests, organic farms, or renewable energy suppliers.
3. **Green Certifications and Labels:** Companies obtain certifications from reputable eco-labeling organizations to validate their products' environmental claims. Examples include ENERGY STAR, Forest Stewardship Council (FSC), and Fair Trade certifications.
4. **Energy Efficiency:** Businesses promote the energy efficiency of their products to highlight reduced energy consumption and lower greenhouse gas emissions.
5. **Waste Reduction:** Companies implement waste reduction strategies in their production processes and encourage consumers to recycle or properly dispose of their products.
6. **Product Innovation:** Developing and marketing innovative, eco-friendly products that meet consumer needs and minimize environmental impact.
7. **Corporate Social Responsibility (CSR):** Companies engage in environmental initiatives and community involvement to demonstrate their commitment to sustainability.
8. **Green Advertising and Communication:** Businesses use eco-friendly themes and imagery in their marketing materials to highlight their environmental commitment.
9. **Transparency and Credibility:** Providing transparent information about the environmental impact of products and practices, ensuring credibility and consumer trust.
10. **Cause Marketing:** Collaborating with environmental organizations or initiatives, where a portion of sales or profits is donated to support environmental causes.
11. **Green Events and Campaigns:** Participating in or organizing environmental awareness campaigns, clean-up events, or sustainable initiatives to engage with consumers and stakeholders.
12. **Educating Consumers:** Raising awareness among consumers about environmental issues and encouraging eco-conscious behavior through marketing and educational campaigns.
13. **Circular Economy Initiatives:** Implementing practices that promote recycling, refurbishing, and reusing products to minimize waste and conserve resources.
14. **Digital Marketing:** Utilizing digital platforms and social media to promote green initiatives and engage with environmentally conscious consumers.
15. **Customer Incentives:** Offering incentives, discounts, or loyalty programs to encourage customers to choose eco-friendly products over conventional alternatives.

It is essential for businesses to implement green marketing techniques authentically and with genuine commitment to sustainability. Greenwashing, where companies exaggerate or make false environmental claims to mislead consumers, should be avoided at all costs, as it can lead to consumer distrust and reputational damage. By adopting meaningful green marketing strategies, businesses can make a positive impact on the environment, meet consumer demands, and build a stronger, environmentally responsible brand (Mekala, Rajanikanth et al., 2021).

USE OF GREEN MARKETING TECHNIQUES USED BY FMCG COMPANIES

Fast-Moving Consumer Goods (FMCG) companies have increasingly recognized the significance of environmental sustainability and the growing demand for eco-friendly products. As a result, they have adopted various green marketing techniques to appeal to environmentally conscious consumers and showcase their commitment to sustainability. Below are some common green marketing techniques employed by FMCG companies:

1. **Eco-Friendly Packaging:** FMCG companies have been actively working to reduce their environmental footprint by adopting eco-friendly packaging solutions. They use recyclable materials, biodegradable packaging, and minimize excess packaging to reduce waste and promote recycling.
2. **Sustainable Sourcing:** Many FMCG companies have focused on sourcing raw materials from sustainable and responsibly managed sources. This includes using certified sustainable palm oil, responsibly sourced cocoa, and other environmentally friendly ingredients.
3. **Green Certifications:** FMCG companies often seek reputable green certifications for their products. These certifications, such as the Forest Stewardship Council (FSC) or the Global Organic Textile Standard (GOTS), provide third-party validation of the products' eco-friendliness and sustainability.
4. **Energy Efficiency:** FMCG companies have embraced energy-efficient practices in their manufacturing processes. They promote products that consume less energy during production, distribution, and usage, thereby reducing their carbon footprint.
5. **Waste Reduction:** FMCG companies actively work to minimize waste generation in their operations. They implement waste reduction strategies, promote recycling, and support circular economy initiatives.
6. **Product Innovation:** FMCG companies continuously invest in research and development to create innovative, environmentally friendly products. These products may have reduced environmental impact throughout their lifecycle or address specific environmental challenges.
7. **Green Advertising and Communication:** Companies use green marketing messages in their advertising and communication campaigns to highlight their sustainable initiatives, eco-friendly products, and environmental achievements.

8. **Corporate Social Responsibility (CSR):** FMCG companies engage in CSR activities that promote environmental conservation and social welfare. These initiatives may include reforestation programs, supporting local communities, or reducing water usage.
9. **Educating Consumers:** FMCG companies play a vital role in raising awareness among consumers about environmental issues. They often educate consumers about the importance of sustainable practices and encourage eco-friendly behavior.
10. **Cause Marketing:** Some FMCG companies collaborate with environmental organizations or participate in environmental causes. They allocate a portion of their sales or profits to support environmental initiatives, thereby linking consumer purchases to positive environmental impact.
11. **Digital Marketing:** FMCG companies leverage digital marketing and social media to engage with environmentally conscious consumers and promote their green initiatives effectively.
12. **Customer Incentives:** Offering incentives or rewards to consumers who choose eco-friendly products can encourage more consumers to make environmentally responsible choices.

FMCG companies understand that adopting green marketing techniques is not only good for the environment but also beneficial for their business. By aligning their practices with sustainability goals and consumer preferences, FMCG companies can attract a growing base of environmentally conscious consumers, enhance brand reputation, and contribute to a more sustainable future.

CONCLUSION

In conclusion, the use of green marketing techniques by Fast-Moving Consumer Goods (FMCG) companies has become a crucial strategy in today's environmentally conscious world. As consumers' awareness and concerns about environmental sustainability continue to grow, FMCG companies have recognized the need to integrate eco-friendly practices into their operations and marketing strategies. Through their commitment to green marketing, these companies strive to appeal to environmentally conscious consumers, strengthen their brand image, and contribute to a more sustainable future.

By adopting various green marketing techniques, FMCG companies have made significant strides in reducing their environmental impact and promoting sustainable practices:

1. Eco-Friendly Packaging: FMCG companies have made efforts to reduce waste and promote recycling by using eco-friendly packaging materials, reducing excess packaging, and adopting innovative packaging designs.
2. Sustainable Sourcing: Companies have shifted towards sourcing raw materials from sustainable and responsible sources, supporting environmentally friendly practices in their supply chains (Amir, Mohd & Dhyani, Atul. 2022).
3. Green Certifications: Many FMCG products carry reputable green certifications, providing consumers with assurance of the products' eco-friendliness and sustainability.

4. Energy Efficiency and Waste Reduction: FMCG companies have implemented energy-efficient practices in their manufacturing processes and have actively pursued waste reduction strategies to minimize their carbon footprint.
5. Product Innovation: FMCG companies continually invest in research and development to create innovative products that are environmentally friendly throughout their lifecycle.
6. Corporate Social Responsibility (CSR): Engaging in CSR initiatives, FMCG companies have contributed to environmental conservation and supported social welfare, positively impacting communities and ecosystems.
7. Educating Consumers: FMCG companies have played a vital role in raising consumer awareness about environmental issues and promoting eco-friendly behavior.

The successful implementation of green marketing techniques has led to several benefits for FMCG companies. They have witnessed increased consumer trust, loyalty, and market share as eco-conscious consumers favor products that align with their values. Moreover, these companies have gained a competitive advantage by positioning themselves as environmentally responsible brands, attracting new customer segments that prioritize sustainability.

However, FMCG companies also face challenges in adopting green marketing strategies. The risk of greenwashing, where companies make false or exaggerated environmental claims, remains a concern. To address this, companies must ensure authenticity and transparency in their green initiatives and communication.

Moving forward, FMCG companies must continue their commitment to green marketing and environmental sustainability. They should embrace innovation and continually improve their products and practices to stay at the forefront of the eco-friendly movement. By staying true to their green values, FMCG companies can not only thrive in the market but also contribute significantly to a more sustainable and environmentally responsible global economy. Ultimately, the use of green marketing techniques by FMCG companies represents a significant step towards building a greener and more sustainable future for generations to come.

REFERENCES

[1] Agrawal, Umang & Ansari, Mohammad (2022). Effect of Green Marketing-Mix on Consumers' Intention to Purchase Green Fast-Moving Consumer Goods (FMCG): An Empirical Evidence, 13.

[2] Amir, Mohd & Dhyani, Atul (2022). Measuring the Influence of Green Marketing Practices on Firms' Competitive Advantage: A Study of Selected Food and Beverage Companies.

[3] Amir, Mohd & Dhyani, Atul (2022). Sustainable Green Marketing Practices Enhance Competitive Advantage in Indian FMCG Sector.

[4] Eneizan, Bilal & Alhamad, Akram & Mat Junoh, mohd Zukime & Ahmad, Tunku. (2019). Green Marketing Strategies: Theoretical Approach. *American Journal of Economics and Business Management*, 2, 77-94. 10.31150/ajebm.Vol2.

[5] Lee, K. (2008). Opportunities for Green Marketing: Young Consumers. *Marketing Intelligence & Planning*, 26(6), 573–586.

[6] Mekala, Rajanikanth & Banerjee, Subhrotosh & School, Symbiosis (2021). Impact of Green Marketing Strategies followed by Detergent Manufacturers on Consumers Impact of Green Marketing Strategies followed by Detergent Manufacturers on Consumers. *Turkish Online Journal of Qualitative Inquiry*, 12, 968–978.

[7] Peattie, S., & Peattie, C. (2003). Ready to greenwash? Greenwash, Advertising, and the Discourses of Organic Consumption. *Environment and Planning A: Economy and Space*, 35(11), 1965–1989.

[8] Solaiman, Mohammad & Osman, Abdullah & Ab, Halim, Mohd Suberi & Ab, Bin & Halim (2015). Green Marketing: A Marketing Mix Point of View.

[9] Sohail, M. Sadiq. (2017). Green marketing strategies: How do they influence consumer-based brand equity?. *J. for Global Business Advancement*, 10, 229. 10.1504/JGBA.2017.10005507.

[10] Sarkar, A., & Neelesh, P. (2018). Leveraging the Power of Green Marketing: An Empirical Study in the Indian Context. *International Journal of Business and Globalisation*, 20(4), 428–444.

[11] Tawani, A., & Agrawal, N. (2016). Consumer Perception and Purchase Intention towards Green Products: A Study of FMCG Products. *International Journal of Advanced Research in Management and Social Sciences*, 5(5), 64–79.

[12] Veroni, Fonseka & Dulanthi, Randika (2019). The Role of Green Markting and How It Effects on Consumers in FMCG Sector.

[13] Wanninayake, WMC & Randiwela, Pradeep (2008). Consumer Attractiveness Towards Green Products of FMCG Sector: An Empirical Study.

Green Marketing and Customer Retention Publication: A Bibliometric Analysis

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Abstract

The green consumer movement highlights humanity's responsibility towards the environment and has led to the emergence of a growing market called the green market. This study aims to evaluate the current state and research landscape concerning the connection between customer retention and green marketing publications indexed in Scopus, using a bibliometric approach. Bibliometric techniques were employed, and data analysis and visualization of search results were conducted using Scopus database analytics, VOSViewer, and Orange software. A total of 211 documents published between 2000 and June 2023 were collected and analyzed in this review. The results indicate a steady increase in the number of publications over the years, although there is still a limited amount of research on the topic of Green Marketing and Customer Retention. Examining the documents published from 2000 to 2023 (June), it was found that India produced the highest number of academic documents (33), and Gao Y. and Mattila A.S. (Pennsylvania, USA) were the most frequently cited authors with 204 citations. Moreover, Al-Hawary, Sulieman Ibraheem Shelash emerged as the most active individual scientists, while the University of Jordan in Amman and the School of Business and Management, a Queen Mary University of London-affiliated institution, were the most prominent organizations involved in research on the association of customer retention with green marketing publications. This study identified a convergence axis grouping, which encompassed various themes such as sustainability, satisfaction, loyalty, value, consumer, intention, influence, industry, and environmental effect. These themes represent the frequently used words in the context of Green Marketing and Customer Retention.

Keywords: *Green Marketing, Customer Retention, Bibliometric Green Marketing, EnvironMental Marketing, Sustainable Marketing.*

INTRODUCTION

Green marketing, also referred to as sustainable marketing or environmental marketing, involves promoting products and services that have minimal negative effects on the environment. In the current business landscape, where environmental concerns are at the forefront, companies are increasingly recognizing the significance of incorporating green marketing strategies into their operations. By aligning their brand with sustainability and demonstrating a commitment

to environmental responsibility, businesses can not only attract environmentally conscious customers but also improve customer retention.

In today's society, where people are increasingly concerned about the environment, green marketing plays a vital role in retaining customers. By adopting sustainable practices and effectively communicating their efforts, businesses can improve their brand reputation, meet customer expectations, build emotional connections, differentiate themselves from competitors, and achieve long-term cost savings. Green marketing not only attracts environmentally conscious customers but also fosters long-lasting relationships based on shared values. As the demand for sustainability continues to rise, companies that prioritize green marketing will have a competitive advantage in retaining their customer base while making a positive impact on the environment. Further, green marketing offers businesses an opportunity to establish a positive brand image. By integrating environmentally friendly practices into their operations, companies can showcase their dedication to sustainability, which resonates with customers who prioritize eco-consciousness. This fosters a strong brand reputation as an environmentally responsible business, attracting a loyal customer base and enhancing customer retention. Moreover, customers today are well-informed and have a heightened awareness of environmental issues. They expect companies to adopt sustainable practices and contribute to a greener future. Green marketing helps companies meet these expectations by providing environmentally friendly products or services and transparently communicating their efforts. When customers perceive that their values align with a brand's commitment to sustainability, they are more likely to remain loyal. Implementing green marketing strategies often goes hand in hand with adopting sustainable business practices. These practices, such as energy-efficient operations or waste reduction, lead to long-term cost savings for companies. By emphasizing these cost benefits to customers, businesses can encourage loyalty and retention. When customers realize that their purchases contribute to a more sustainable and cost-effective future, they are more inclined to continue supporting the brand. By embracing sustainable practices, effectively communicating efforts, and aligning with customer values, companies can build strong brand reputations, meet customer expectations, foster emotional connections, differentiate themselves from competitors, achieve long-term cost savings, and make a positive impact on the environment.By highlighting their environmental initiatives, companies can establish a sense of shared values and purpose with their target audience. This emotional connection encourages customer loyalty and commitment over time. Green marketing initiatives create opportunities for companies to engage customers and foster lasting relationships based on shared environmental concerns. In an increasingly competitive market, incorporating green marketing strategies enables businesses to differentiate themselves. When customers have similar choices, they are more likely to opt for a company that demonstrates a commitment to sustainability. By emphasizing their eco-friendly practices, businesses can stand out and increase customer retention.

Green marketing thus have strong co-relation. This research paper explores the association between green marketing and customer retention by way of bibliometric analysis.

LITERATURE REVIEW

Customer retention encompasses strategic activities and efforts aimed at establishing long-term relationships between a company and its customers. The goal is to retain customers over time, foster loyalty, and decrease the likelihood of them switching to competitors (Michael D. Johnsan & Anders Gustafsson). In today's business world, customer retention is not only cost-effective and profitable but also necessary. This is particularly important when considering that a significant portion of sales, around 80%, comes from a small percentage of loyal customers. Maintaining good customer retention is vital for any organization because even a slight reduction in customer defection rate can have a disproportionately positive impact on profitability. Furthermore, companies with high retention rates tend to experience faster growth. However, customer retention is only possible if customers are loyal and motivated to resist competition (Chan, Chunhua & Ying, 2011). Meeting promises and expectations is crucial for achieving high customer satisfaction. This requires the organization's ability to understand customer expectations and consistently deliver on them. Effectively addressing problems as they arise is also a key ingredient for success. Additionally, organizations should view complaints as opportunities for improvement. The impact of losing customers is significant, but many businesses fail to recognize its importance. Acquiring a new customer costs much more than retaining and selling to an existing one. Even a small increase in customer retention can lead to a dramatic rise in profits (Yildiz, 2017).

Studies conducted across different regions by Grönroos and Uoimaa (2013), Payne and Fow (2017), Yiping, Shuai, Chen, and Xia (2014) demonstrate a positive connection between relationship marketing and customer retention. Chen and Chang (2012), Chen and Lobo (2012), Lin and Huang (2012), Mayer (2013), Norazah (2013), and Norazah and Norbayah (2015) have established that green marketing has a positive and significant relationship with customer retention. However, these studies also suggest that the positive findings are situation-dependent. When choosing green products, consumers tend to consider situational characteristics and product features. High-quality green products are more likely to be accepted by consumers and result in satisfaction, loyalty, and repurchase intentions (Chang & Fong, 2010; Norazah, 2013; Tang et al., 2014).

In today's era of heightened environmental awareness, businesses face a dual challenge of meeting customer demands while minimizing their ecological impact. By incorporating sustainability principles into their marketing practices, organizations can cater to environmentally conscious customers and simultaneously foster customer loyalty and retention. Green marketing, also known as environmental marketing or sustainable marketing, encompasses a wide range of activities aimed at developing and promoting products and services that meet customer needs and wants while minimizing negative environmental effects. According to Jacquelyn A. Ottman, "Green marketing is the process of developing and promoting products and services that satisfy customer's needs and wants for quality, performance, affordability, and convenience while also minimizing environmental impacts." This involves integrating environmental considerations into all aspects of marketing decision

making. The American Marketing Association (AMA) defines green marketing as the marketing of products presumed to be environmentally safe. It includes various activities such as product modification, changes to the production process, sustainable packaging, and modifications to advertising and promotional campaigns (Philip Kotler & Nancy Lee).Academics and industry professionals, increasingly recognizing the value of sustainable growth, science, and practice, also demonstrate that green products can contribute to environmental protection (Brito & Laan, 2010; Zhang et al., 2019). Recent studies indicate that conventional business strategies do not align with stakeholders' expectations regarding ecological responsibility (Ara et al., 2019). Further research is needed to explore this discrepancy. Unfortunately, despite presenting a broad overview of various published studies at a global scale, there is still a scarcity of publications on green marketing.

RESEARCH METHODOLOGY

The research employed bibliometric techniques to gather and analyze data. Software such as VOSViewer, Orange, and the Scopus database function were used for data analysis and visualization. This research paper presents an overview of the research conducted on green marketing and customer retention from 2000 to the present, spanning a period of 23 years. The data for this study was collected from Scopus using specific search queries related to green marketing and customer retention. The search command used on the Scopus database was "Green marketing" and "Customer Retention", which helped extract relevant academic publications from the database.

RESULTS AND DISCUSSIONS

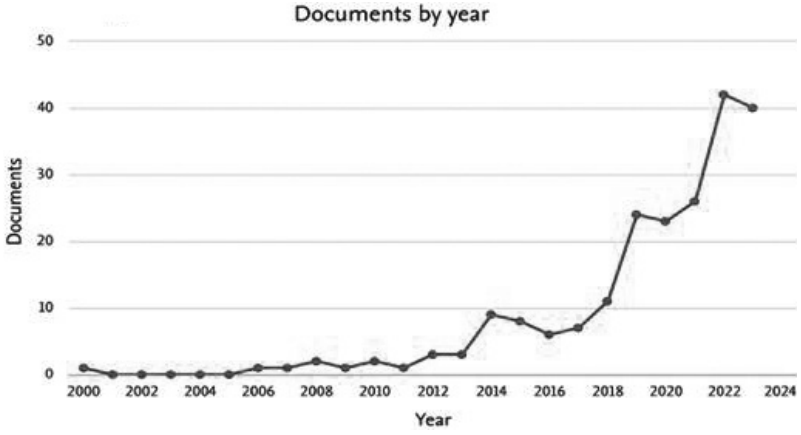


Figure 1: Number of Publications Per Year on Green Marketing and Customer Retention
Source: Scopus analytics

As shown in Figure 1, the number of documents pertaining to Green Marketing and Customer Retention has been consistently rising each year. However, it is noteworthy that the overall number of publications on this topic remains relatively low. The data illustrates the publication

trend from 2000 to the present year, 2023. According to the analytics of the Scopus database, the graph demonstrates a continuous growth in publications related to green marketing and customer retention each year. In 2022, the highest number of international publications on this topic was recorded, reaching a total of 42 documents. Furthermore, it is projected that the number of publications will continue to increase in 2023, with a current count of 40 documents already available.

Green Marketing and Customer Retention Publications: Most Common Nations

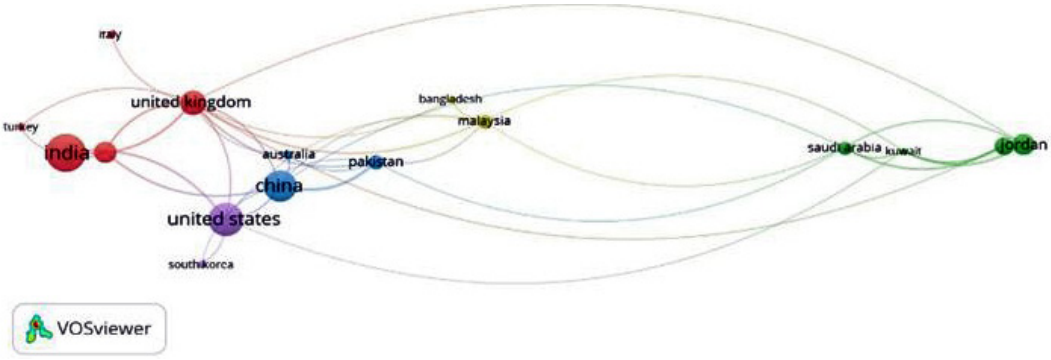


Figure 2: Nationwise Publication on Green Marketing and Customer Retention
Source: Researcher's analysis using VOSViewer

Figure 2 shows that the literature on Green Marketing and Customer Retention shows that India has emerged as the top research nation, having produced a significant number of 33 academic documents. The United States closely follows with 28 academic documents. Other countries such as China, the United Kingdom, Jordan, Taiwan, the United Arab Emirates, Pakistan, Spain, and Malaysia have also made noteworthy contributions to this field of study.

Green Marketing and Customer Retention : Most Common Organizational Affiliations

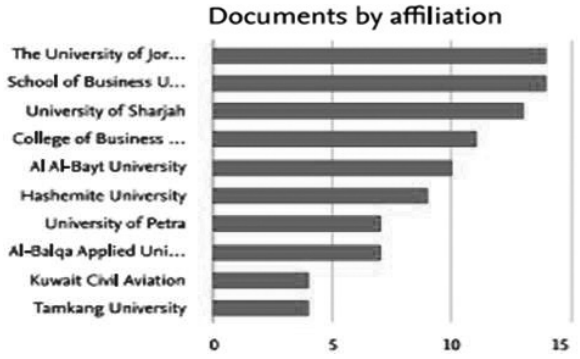


Figure 3: Organizational Affiliation versus Annual Publication of Green Marketing and Customer Retention
Source: Scopus analytics

The University of Jordan in Amman and the School of Business and Management at Queen Mary University of London were the top research organizations in terms of publications on green marketing and customer retention, with a total of 14 documents. They were closely followed by the University of Sharjah, College of Business Administration, Al-Al Bayt University, Hashemite University, University of Petra, Al Balqa Applied University, Kuwait Civil Aviation, and Tamkang University.

Green Marketing and Customer Retention Publications: Most Individual Researcher

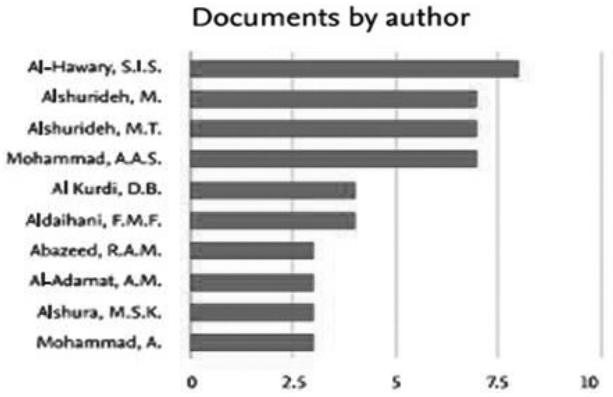


Figure 4: Green Marketing and Customer Retention Publication – Individual Researcher
Source: Scopus analytics

Figure 4 depicts that the researcher who produced the highest number of writings in the field of green marketing and customer retention was Al-Hawary, Sulieman Ibraheem Shelash, with a total of 8 documents. Following closely behind were Alshurideh, Taryam M. and Mohammed, Anber Abraheem Shlash, each with 7 documents. Al kurdi, F.M.F. also made significant contributions with 4 documents.

The Largest Frequency of Publications of Green Marketing by Subject Area

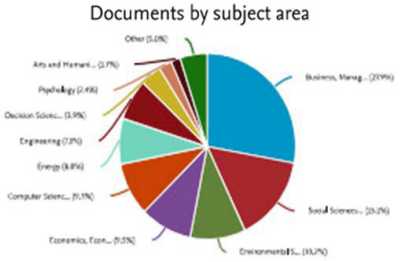


Figure 5: Largest Frequency of Publication of Green Marketing by Subject Area
Source: Scopus analytics

The Figure 5 highlights subject area of business, management, and accounting had the highest representation, accounting for 27.9% of international publications on green marketing and

customer retention. Social Science followed closely behind with 15.1% of the documents. Environmental Science comprised 10.2% of the publications, while Economics accounted for 9.5%. Other subject areas included Computer Science (9.3%), Energy (8.0%), Engineering (7.1%), Decision Science (3.9%), Psychology (2.4%), Arts and Humanities (1.7%), and others (5.0%).

Documents of Green Marketing and Customer Retention: Publication Funding Sponsor

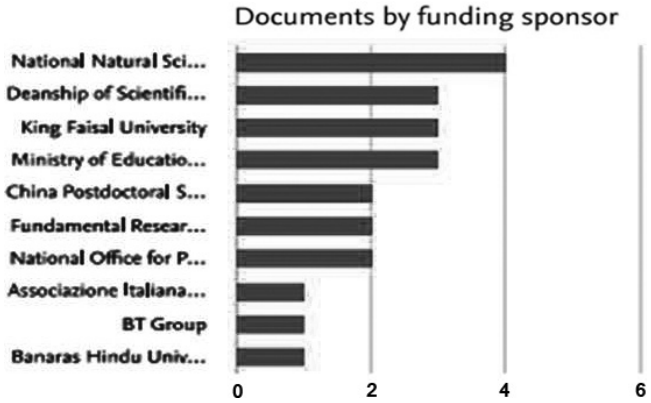


Figure 6: Publication on Green Marketing and Customer Retention by Funding Sponsor
Source: Scopus analytics

Figure 6 shows that the National Natural Science Foundation of China (NSFC) stands as the primary sponsor in the field of green marketing and customer retention research, followed by the Deanship of Scientific Research at King Faisal University. Other notable sponsors include the Ministry of Education of the People's Republic of China, China Postdoctoral Science Foundation, Fundamental Research Funds for the Central Universities, National Office for Philosophy and Social Sciences (NPOPSS), Associazione Italiana Contro le Leucemie AIL, BT Group, and Banaras Hindu University.

Publication Green Marketing and Customer Retention: Article Cited

Table 1: Top 10 Most Cited Authors along with Most Cited Titles

Gao, Y.; Mattila, A.S.	Improving consumer satisfaction in green hotels: The roles of perceived warmth, perceived competence, and CSR motive	204
Wang, J.; Wang, S.; Xue, H.; Wang, Y.; Li, J.	Green image and consumers' word-of-mouth intention in the green hotel industry. The moderating effect of Millennials	180
Beckers, S.F.M.; Doom, J.V.; Verhoef, P.C.	Good, better, engaged? The effect of company-initiated customer engagement behaviour on shareholder value	172
Jeong, E.; Jang, S.; Day, J.; Ha, S.	The impact of eco-friendly practices on green image and customer attitudes: An investigation in a café setting	147

Panda, T.K.; Kumar, A.; Jakhar, S.; Luthra, S.; Garza-Reyes, J.A.; Kazancoglu, I.; Nayak, S.S.	Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism	138
Martinez, P.	Customer loyalty: Exploring its antecedents from a green marketing perspective	132
Lee, C.K.M.; Lam, J.S.L.	Managing reverse logistics to enhance sustainability of industrial marketing	126
Yadav, R.; Kumar Dokania A.; Swaroop Pathak G.	The influence of green marketing functions in building corporate image: Evidences from hospitality industry in a developing nation	87
Papista, E; Krystallis, A.	Investigating the types of value and cost of green Brands: Proposition of a conceptual framework	85
Chen, Y.S.; Lin, C.Y.; Weng, C.-S.	The influence of environmental friendliness on green trust: The mediation effects of green satisfaction and green perceived quality	84

Source: Researcher's analysis from scopus csv

Table 1 shows the summery of top 10 highly cited authors. The study titled "Improving consumer satisfaction in green hotels: The roles of perceived competence and CSR motive" by Gao Y. and Mattila A.S. has received the highest number of citations, with 204 citations. Following closely behind is the study by Wang J., Wang S., Xue H., Wang Y., and Li J. titled "Green image and consumers' word of mouth intention in the green hotel industry: The moderating effect of Millennials," which has been cited in 180 documents. The study conducted by Beckers S.F.M., Doorn J.V., and Verhoef P.C. titled "Good, better, engaged? The effect of company-initiated customer engagement behavior on shareholder value" has garnered 172 citations. The study titled "The impact of eco-friendly practice on green image and customer attitudes: An investigation in a cafe setting" by Jeong E., Jang S., Day J.,

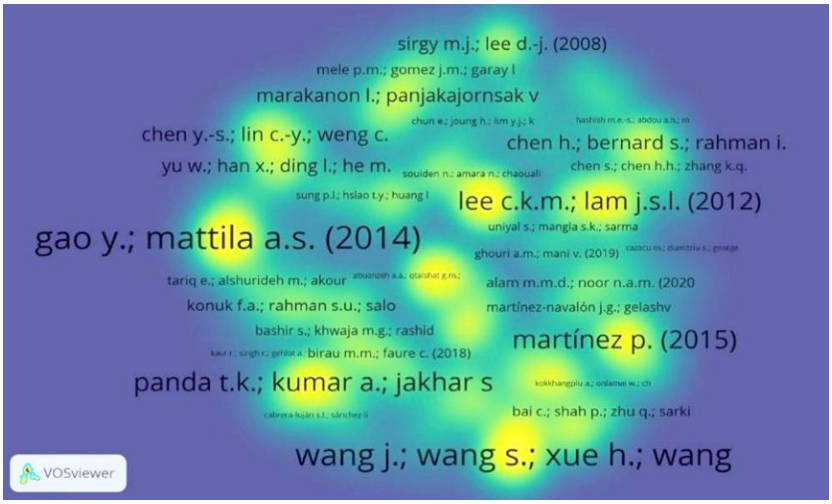


Figure 7: Most Cited Authors
Source: Researcher's analysis from VOSviewer

and Has S. follows with 147 citations. Lastly, the study on the "Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty, and evangelism" has been cited in 138 documents.

The Figure 7, depicts the same result using VOSviewer as Gao Y. and Mattila A.S. have most concentration of citations.

The Word Cloud: Green Marketing and Customer Retention Publication



Figure 8: Word Cloud using Orange Software
Source: Researcher's analysis using Orange software

In the Figure 8, the Word Cloud clearly shows that "Customer", "Perceived", "Green", "Image" and "Marketing" are the five most important words in the Green marketing and customer retention publication documents. The Sustainability, satisfaction, loyalty, value, consumer, intention, influence, industry, environmental and effect are some other most frequently used words in the Green marketing and Customer retention Publication articles. The customer loyalty, Perceived value, Green consumer, Image improving, environmental practices, Influence Marketing are identified as key themes in the green marketing and customer retention area.

CONCLUSION

The bibliometric research conducted on the topic of green marketing and customer retention reveals several significant findings. Firstly, there is an annual increase in the number of publications in this field, as indicated by various analytics applied to the Scopus database. India stands out as the country with the highest contribution to publications in this area. The University of Jordan in Amman and the School of Business and Management at Queen Mary University of London are the most active research institutes in terms of publications on green marketing and customer retention, with 14 documents each. Among individual academic researchers, Al-Hawary, Sulieman Ibraheem Shelash has the most publications, with a total of 8 documents.

In terms of subject areas, business, management, and accounting have the highest frequency, accounting for 27.9% of international publications on green marketing and customer retention. The National Natural Science Foundation of China (NSFC) emerges as the leading sponsor in this field. Among the publications, the study titled "Improving consumer satisfaction in green hotels: The roles of perceived competence and CSR motive" by Gao Y. and Mattila A.S. has received the highest number of citations, with 204 citations.

Key themes identified in the green marketing and customer retention field include customer loyalty, perceived value, green consumer behavior, image improvement, environmental practices, and influence marketing. However, it is important to note that the overall number of publications on this topic suggests that there is room for further research and knowledge expansion in this area.

REFERENCES

[1] Beckers, S.F.M., Doorn, J.V., & Verhoef, P.C. (2017). Good, better, engaged? The effect of company initiated customer engagement behaviour on shareholder value. *Journal of the Academy of Marketing Science*, 46(3), 1–18.

[2] Chang, N., & Fong, C.M. (2010). Green product quality, green corporate image, green customer satisfaction, and green customer loyalty. *African Journal of Business Management*, 4(13), 2836–2844.

[3] Chen, J., & Lobo, A. (2012). Organic food products in China: determinants of consumer's purchase intentions. *The International Review of Retail, Distribution and Consumer Research* 22(3), 293–314.

[4] Chen, Y., & Chang, C. (2012). Enhance green purchase intentions: The roles of green perceived value, green perceived risk, and green trust. *Management decision*, 50(3), 502–520.

[5] Chen,Y.-S., Lin, C.-Y., & Weng, C.-S. (2015). The Influence of Environmental Friendliness on Green Trust: The Mediation Effects of Green Satisfaction and Green Perceived Quality. *Sustainability*, 7(8), 10135–10152.

[6] Gao,Y.L.,& Mattila, A.S. (2014).Improving customer satisfaction in green hotels: The roles of perceived warmth, perceived competence, and CSR motive. *International Journal of Hospitability Management*, 42, 20–31.

[7] Gronroos, C. (2017). Relationship marketing and service : An update. Journal of Global Scholars of Marketing Science, 27(3), 201–208.

[8] Hartmann, P., & Apaolaza, V. (2012). Consumer attitude and purchase intention toward green energy brands: The roles of psycholoigical benefits and environmental concern. *Journal of Business Research*, 65(9).

[9] Hsieh, H-S., Liao, Y-M., Tsai, H-C., Huang Ling, & Chung (2012). A study of building the crisis prevention model for the innovation development of green marketing: A case of automative industry. *African Journal of Business Management*, 6(7), 2644–2658.

[10] Jeong, E., Jang, S., Day, J., & Ha, S. (2014). The impact of eco friendly practices on green image and customer attitudes: An investigation in a café setting. *International Journal of Hospitability Management*, 41, 10–20.

[11] Lee, C.K.M., & Lam, J.S.L. (2012). Managing reverse logistics to enhance sustainability of industrial marketing. *Industrial Marketing Management*, 41(4), 589–598.

[12] Martinez, P. (2015). Customer loyalty: Exploring its antecedents from a green marketing perspective. *International Journal of Contemporary Hospitability Management*, 27(5).

[13] Mayer, A. (2013). Education and the environment: An international study. *International Journal of Sustainable Development & World Ecology*, 20(6), 512–519.

[14] Norazah, M.S. (2013). Green awareness effects on consumer's purchasing decision: Some insights from Malaysia. *International Journal of Asia Pacific Studies*, 9(2), 49–63.

[15] Panda,T.K., Kumar, A., Jakhar, S., Luthra, S., Garza-Reyes, J.A., Kazancoglu, I., & Nayak, S.S. (2020). Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism. *Journal of Cleaner Production*, 243(3).

[16] Papista, E., & Krystallis, A. (2013). Investigating the Types of Value and Cost of Green Brands: Proposition of a Conceptual Framework. *Journal of Business Ethics*, 115(1), 75–92.

[17] Payne, A., & Frow, P. (2017). Relationship Marketing: Looking backwards towards the future. *Journal of Services Marketing*, 31(1), 11–15.

[18] Sivesan, S., Achchuthan, S., & Umanakenan, R. (2013). Green marketing practices and customer satisfaction: A special reference to leather goods. *Global Journal of Management and Business Research*, 13(3), 51–59.

[19] Tiwari, S., Tripathi, D.M., Srivastva, U., & Yadav, P.K. (2011). Green marketing – Emerging dimensions. *Journal of Business Excellence*, 2(1), 18–23.

[20] Wang, J., & Wang, S., Xue, H., Wang, Y., Li, J. (2018). Green image and consumers' word of mouth intention in the green hotel industry: The moderating effect of Millennials. *Journal of Cleaner Production*, 181, 426–436.

[21] Widyastuti, S., Said, M., Siswono, S., & Firmansyah, A.D. (2019). Customer Trust through Green Corporate Image, Green Marketing Strategy, and Social Responsibility: A Case Study. *European Research Studies Journal*, 22(2), 83–99.

[22] Yadav, R., Kumar Dokania, A., & Swaroop Pathak, G. (2016). The influence of green marketing functions in building corporate image: Evidences from hospitality industry in a developing nation. *International Journal of Contemporary Hospitality Management*, 28(10), 2178–2196.

[23] Yildiz-Toker, & K., Trivedi, K. (2017). Social Interactions and monetary incentives in driving consumer repeat behavior. *Journal of Marketing Research*, 54(3).

Sustainable Consumption Behaviour: A Study of Delhi-NCR

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Abstract

Due to growing concerns about environmental degradation, resource depletion, and social equity, the concept of sustainable consumption behaviour has received substantial attention in recent years. Understanding and guiding consumer choices towards more sustainable practises has become crucial as societies seek to address these concerns.

The purpose of this paper is to provide an overview of sustainable consumption behaviour, including its definition and impact on the environment and society. For this study, a questionnaire survey was deployed to collect the data from respondents. This study used Convenience Sampling Technique for collecting the data. 71 valid samples were obtained. The data were further analyzed through Pearson Correlation using SPSS (Statistical Analysis for Statistical Package). This study found the positive correlation between the variables that were taken in this study.

Keywords: *Environmental Degradation, Resource Depletion, Sustainable Consumption, Sustainable Consumption Behaviour.*

INTRODUCTION

As countries around the world battle with urgent environmental and social concerns, sustainable purchasing behaviour is gaining prominence. It refers to individuals', households', and communities' purposeful decisions and activities to lessen their ecological footprint and promote a more sustainable way of life. Individuals can help to preserve natural resources, reduce waste output, and improve society's overall well-being by considering the environmental and social effects of their consumption patterns. Individual purchasing decisions have far-reaching effects for the environment, human well-being, and future generations, as recognised by the idea of sustainable consumption behaviour. It extends beyond simple consumption choices to a larger perspective that analyses the entire life cycle of a product, including its manufacture, usage, and disposal. Choosing environmentally friendly products, practising resource efficiency, minimizing waste, and adopting a lifestyle that prioritises long-term sustainability above short-term enjoyment are all examples of sustainable consumption behaviour.

The United Nations Environment Programme defines sustainable consumption as "the use of material products, energy, and immaterial services in such a way that the environmental impact is minimized, allowing human needs to be met not only in the present but also for future generations."

Understanding the causes and barriers of sustainable consumption behaviour is critical for motivating and supporting individuals to make more sustainable choices. Individual consumption decisions are influenced by factors such as socioeconomic background, personal values and attitudes, cultural norms, and availability to sustainable products and services. Psychological and emotional elements, such as a need for social recognition, personal fulfilment, and a sense of responsibility, also influence sustainable consumption behaviour.

Effective communication and education initiatives may enhance consumer awareness of the benefits of sustainable purchasing, educate them on sustainable alternatives, and encourage behaviour change. By making eco-friendly solutions more accessible and appealing, sustainable product design, availability, and price can also help consumers embrace sustainable consumption practises. The significance of sustainable consumerism goes beyond individual choices. Governments, corporations, and other stakeholders must work together to create an environment that encourages and rewards sustainable consumption. Policies that encourage sustainable manufacturing, labelling schemes that inform consumers about the environmental impact of products, and programmes that create stakeholder engagement can all help to shape a more sustainable consumption landscape. Individuals can help to create a more sustainable and fair future by adopting sustainable consumption practises.

SIGNIFICANCE OF SUSTAINABLE CONSUMPTION

Sustainable consumption refers to the purchase of goods and services that have a low environmental effect and enhance social and economic well-being. It entails making decisions that consider the long-term effects of our consumption patterns, with the goal of minimizing resource depletion, waste generation, and environmental deterioration. Sustainable consumption is important because it helps to address environmental issues, save resources, promote social fairness, improve health and well-being, develop economic opportunities, and ensure our planet's long-term sustainability.

Understanding sustainable consumption behaviour and its impact on the environment allows policymakers, corporations, and individuals to collaborate to create a more sustainable future in which consumption decisions relate with long-term ecological and societal well-being.

LITERATURE REVIEW

Concept of Consumer Behaviour and Consumer Practices

According to American Marketing Association (AMA), "Consumer Behaviour is the dynamic interaction of cognition, behaviour and environmental events by which human beings conducts

the exchange aspects of their lives" (Mande&Taofeek,2022; Peter&Olson,2005). Consumer purchasing behavior is the study of how individuals, communities, and organizations acquire and dispose of goods, services, ideas, or experiences to suit their needs and desires (Kotler & Keller, 2011).

The consumer behaviour is an important topic and considered as inseparable part of marketing. Kumar (2010) defined consumer buying behaviour as "It refers to the buying behaviour of final consumers, both individuals and households, who buy goods and services for personal consumption".

Consumer behaviour is essentially a preference that every customer or individual has while purchasing a product. Consumers constantly gather information about a product before making purchasing decisions. Consumer behaviour research provides individuals with the information they need to make sensible decision about how to spend their limited resources. Consumer Practices are the acts, behaviours, and habits of individuals or groups in their consumption of products and services. It includes the complete process of purchasing, using, and disposing of goods or services in the marketplace.

Concept of Sustainable Consumption

A broad definition of Sustainable Consumption was developed in 1994 at the Oslo Symposium endorsed/approved by the United Nations, which defined Sustainable Consumption is "the use of goods & services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations (Oslo Roundtable, 1994; Xiao & Li, 2011).

This definition is comprehensive and broad. It is related to both manufacturing units and individual customers' activities. It is concerned with both environmental protection and resource utilisation. Also it tried to strike a balance between the current and future well-being of consumer populations. Sustainable Consumption is the use of products and services in such a way that the environmental impact is minimized, allowing human needs to be addressed not only in the present but also for future generations. When people practise sustainable consumption, they use resources wisely and produce less waste and pollution.

Sustainable Consumption Behaviour (SCB)

Different Scholars have connoted SCB differently based on their backgrounds, and it may encompass a white range of components and varied interpretation. SCB is widely used interchangeable with particular word such as "Green Consumption Behaviour" (Biswas, A, 2017); Pro-Environmental Consumption Behaviour (Saari et al., 2021; Dimitrova et al., 2022).

Sustainable Consumption is more than just buying ecologically good/friendly products (Fedrigo & Hontelez, 2010). It addresses a wide range of concerns such as serving consumers'

requirements sustainably, improving resource efficiency, improving quality of life, encouraging the use of renewable sources and reducing waste (Wang et al., 2014). SCB is defined as the pattern of reduced natural resource consumption, altering lifestyle, and consumption of environmentally friendly items in order to meet the current requirements and ambitions of future generations (Biswas & Roy, 2005; Rizkalla, N., 2018).

Environmental Knowledge and Concerns

Environmental knowledge, also known as knowledge about environmental concerns, relates to individuals' awareness/understanding of the state of the environment, climate change, environmental perspectives & the ecological effects of consumption & products (Pagiaslis & Krontalis, 2014). Environment concerned is dependent on awareness about the prevalence of environmental concerns (Franzen and Meyer, 2010; Franzen and Vogl,2013; Marquart-Pyatt, 2018). Hence, detailed information on environmental issues help raise environmental awareness.

Environment concerns, according to Franzen & Meyer (2010), is an individual's knowledge/awareness of the environment being threatened by pollution or resource misuse. It is concerned about the natural environments and also the negative impacts of conventional items when compared to organic items. Environmental Concerns is an important factor that may cause to increased SCB (Minton and Rose,1997; Roberts and Bacon,1997). Environmental Concerns is typically associated or related with SCB (Fraj-Andrés and Martínez-Salinas, 2007; Wakefield et al., 2006; Saari et al., 2021) .

Wastage Reduction

People can conserve the natural resources through 3 R's – Reduce, Reuse and Recycle:

- Reducing means lowering the quantity of the waste that people generate. In this study, it is mainly concerned, reducing the usage of natural resources. Example include, turn off the lights when not using them.
- Reuse encompasses using the same item again for the same function and also using an item again for a new function. Example include, while go for shopping, use reusable bags.
- Recycle refers to the process of converting waste into reusable material. Example include, Biodegradable waste; batteries; electronics; paper including newspaper, magazines and mixed paper etc.

OBJECTIVES OF THE STUDY

The main objectives of the study are:

- To investigate the relationship between Consumer Practices and Sustainable Consumption
- To identify the relationship between Sustainable Consumption and Wastage Reduction
- To assess the relationship of Sustainable Consumption with Environmental Concern

FORMULATION OF HYPOTHESIS

- Consumer practices and sustainable consumption have arisen as key areas of research and concern in the context of global environmental issues and the goal of a more sustainable future. Consumer decisions and practices have a significant impact on the demand for goods and services, influencing resource consumption, waste generation, and environmental impacts. Understanding the relationship between consumer practices and sustainable consumption is critical for designing successful tactics and interventions to encourage more sustainable choices among people and society as a whole.

  Hypothesis 1

  H_{1o} There is no significant relationship between Consumer Practices and Sustainable Consumption.

  H_{1a} There is a significant relationship between Consumer Practices and Sustainable Consumption.

- Sustainable consumption and waste reduction are two interconnected ideas that are critical in tackling environmental concerns and ensuring long-term sustainability. Sustainable consumption is defined as the usage of goods and services that have a low environmental effect throughout their life cycle while also supporting social fairness and economic well-being. Wastage reduction, on the other hand, focuses on reducing waste output and optimizing resource utilization in order to minimize environmental harm.

  Hypothesis 2

  H_{2o} Sustainable consumption does not reduce the Wastage

  H_{2a} Sustainable Consumption does reduce the Wastage

- The relationship between environmental concerns and long-term sustainability is of vital importance for tackling global environmental difficulties and achieving long-term sustainability. Environmental worries are concerned about the detrimental effects of human actions on the environment, such as climate change, deforestation, pollution, biodiversity loss, and resource depletion. Sustainable consumption, on the other hand, refers to purchasing products and services in a way that reduces environmental effect, conserves resources, and promotes social well-being.

  Hypothesis 3

  H_{3o} There is no significant relationship between Sustainable Consumption and Environmental Concerns

  H_{3a} There is a significant relationship between Sustainable Consumption and Environmental Concerns

RESEARCH FRAMEWORK

Based on the research hypothesis constructed above, 4 variables are taken in this study namely, Consumer Practices, Sustainable Consumption, Wastage Reduction, Environmental Concern. Figure 1 summarizes the proposed research model for this study.

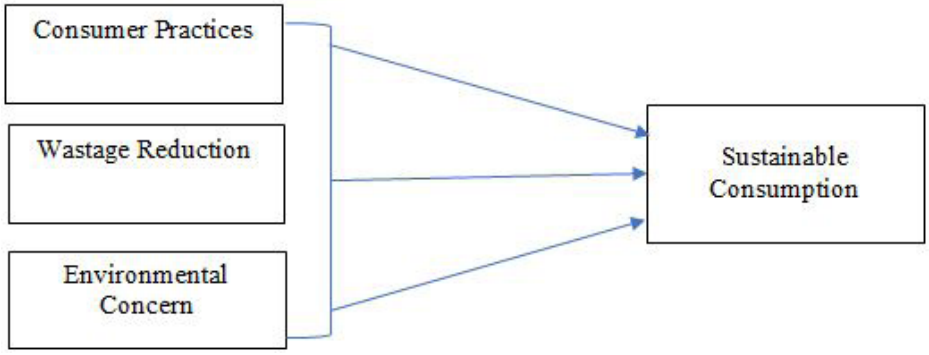


Figure 1: Research Framework

RESEARCH METHODOLOGY

- **Research Design and Source of Data:** This study used Descriptive research design, to investigate the correlation between the variables. Primary data were collected through questionnaire survey, which consisted of five sections. Section 1 aimed at Demographic Profile of respondents. Sections 2,3,4,5 were the main sections of each variable, representing the various statements related to proposed variables. Researcher has also used the Secondary data through reading various articles, previous research papers etc.
- **Sampling Technique and Sample Size:** Convenience sampling technique was used for collecting the data and the were obtained from 71 respondents i.e. Sample Size taken for this study is 71. Different age especially, young generation, were asked to give their views.
- **Data Analysis:** This study showed the demographic profile where respondents are categorized as per their gender, age, occupation, educational background, monthly income of respondents. The responses collected from respondents were analyzed using SPSS (Statistical Package for Social Sciences). Correlation Technique was employed for examining the relationship/correlation between variables.

ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Respondents

		Frequency	*Percentage*
Gender	Male	35	49.3
	Female	36	50.7
	Total	71	100
Age	18-25	49	69.0
	26-35	21	29.6
	36-45	01	1.4
	46&above	00	0.0
	Total	71	100

		Frequency	*Percentage*
Occupation	Entrepreneur/Own Business	01	1.4
	Student	37	52.1
	Employed	27	38.0
	Others	06	8.5
	Total	71	100
Educational Qualification	Graduation	28	39.4
	Post graduation	33	46.5
	PhD	04	5.6
	Others	06	8.5
	Total	71	100
Monthly Income (Individual)	Less than 10,000	27	38.0
	10,001-30,000	15	21.1
	30,001-50,000	16	22.5
	50,001&above	13	18.3
	Total	71	100

Interpretation: Above table shows the demographic profile of respondents. 49.3% responses were collected from Male and 50.7% responses were collected from Females. The respondents aged between 18-25 has willingly participated in sharing their views having 69% responses of total. 52.1% responses were collected from Students. 46.5% responses were obtained from Post graduated students. 38% respondents have revealed that they self-earn, less than 10,000 while 22.5% responses were collected from respondents, earning 30,001–50,000.

Table 2

Descriptive Statistics

	Mean	*Standard Deviation*	*N*
Consumer Practices	3.9085	0.54101	71
Sustainable Consumption	3.97	0.558	71

Correlations

	Consumer Practices	*Sustainable Consumption*
Consumer Practices:		
Pearson Correlation	1	0.799**
Significance (2-tailed)		0.000
N	71	71
Sustainable Consumption:		
Pearson Correlation	0.799**	1
Significance (2-tailed)	0.000	
N	71	71

** Shows that the correlation is significant at the 0.01 level (2-tailed).

Interpretation: The above Correlation table shows that the variables (Consumer Practices and Sustainable consumption) have a correlation coefficient (r) value of 0.799, indicating

a high degree of positive correlation between the variables (Mande & Taofeek, 2022). As the P value is 0.000 which shows that the association is statistically significant. Hence, in Hypothesis 1, H_{1a} has been accepted.

Table 3

Descriptive Statistics

	Mean	*Standard Deviation*	*N*
Sustainable Consumption	3.97	0.558	71
Wastage Reduction	4.19	0.387	71

Correlations

	Sustainable Consumption	*Wastage Reduction*
Sustainable Consumption:		
Pearson Correlation	1	0.560**
Significance (2-tailed)		0.000
N	71	71
Wastage Reduction:		
Pearson Correlation	0.560**	1
Significance (2-tailed)	0.000	
N	71	71

** Shows that the correlation is significant at the 0.01 level (2-tailed).

Interpretation: Above Correlation table shows the Correlation Coefficient (r) value is 0.560, showing the moderate positive correlation between the variables (Sustainable Consumption and Wastage Reduction) (Mande & Taofeek, 2022). The P value being 0.000 shows the association is significant. Hence, in Hypothesis 2, H_{20} is rejected and H_{2a} is accepted.

Table 4

Descriptive Statistics

	Mean	*Standard Deviation*	*N*
Sustainable Consumption	3.97	0.558	71
Environmental Concern	4.21	0.461	71

Correlations

	Sustainable Consumption	*Environmental Concern*
Sustainable Consumption:		
Pearson Correlation	1	0.539**
Significance (2-tailed)		0.000
N	71	71
Environmental Concern:		
Pearson Correlation	0.539**	1
Significance (2-tailed)	0.000	
N	71	71

** Shows that the correlation is significant at the 0.01 level (2-tailed).

Interpretation: For Hypothesis 3, H_{3o} is rejected and Ha is accepted, having Correlation Coefficient (r) value is 0.539, indicating moderate positive correlation between variables (Sustainable Consumption and Environmental Concern) (Mande&Taofeek,2022). The P value, being, 0.000 showed that the relationship is statistically significant.

DISCUSSION AND FINDINGS

This study found, in Hypothesis 1, H_{1a} is accepted, stating that there exists a strong positive correlation between the variables (consumer practices and sustainable consumption). It shows that with increasing practices adopted by consumers regarding sustainable products, there are higher chances in their increased sustainable consumption behaviour. The positive correlation between the taken variables, can be attributed to several factors like growing environmental awareness, sustainability initiatives that companies and businesses are adopting in response to consumer demands availability of sustainability products, accessibility of sustainable products, and many more.

In Hypothesis 2, H_{2a} is accepted, stating that there exists a moderate correlation between variables (sustainable consumption and wastage reduction). Sustainable consumption and waste reduction are principles that reinforce one another, resulting in more effective resource usage and a lower environmental impact. The reasons for the correlation between the variables could be conscious consumption, Governments and non-governmental groups that promote sustainable consumption frequently create legislation and regulations that encourage waste reduction and more responsible consumption practices. Recycling laws, waste management rules, and extended producer responsibility (EPR) initiatives are all examples of waste reduction measures. It indicates that sustainable consumption does reduce the wastage.

In Hypothesis 3, H_{3a} is accepted, indicating that there is a significant correlation between sustainable consumption and environmental concerns. There could be several reasons that the variables taken in hypothesis 3 tend to have a correlation, it could be the possibility that individuals are becoming aware regarding environmental issues so they are inclined towards consuming environmental-friendly or sustainable products, it could also have the possibility regarding the preferences towards eco-friendly products so as to demonstrate the environmental responsibility. In all three hypothesis constructed earlier, $H_{1,2,3o}$ is rejected, while accepting the $H_{1,2,3a}$, revealing the existence of positive correlation between the variables, having high degree of correlation in 1st hypothesis and moderate correlation in rest of the hypothesis. Improving sustainable consumption is making deliberate choices that reduce negative environmental and social implications while yet meeting our needs and aspirations. Some strategies for increasing sustainable consumption may include, encourage people to think about how their consuming habits affect the environment and society, encourage people to take public transportation, carpool, cycle, and walk, encourage the development of electric vehicles that encourages environmentally friendly transportation options, etc.

CONCLUSION

Numerous studies and research have emphasized the relevance of sustainable consumption in combating climate change, minimizing resource depletion, preserving biodiversity, and enhancing overall well-being. Sustainable consumption refers to individuals' and communities' responsible and deliberate choices to reduce the adverse consequences of their consumption habits on the environment, society, and economy. This study gives an insight regarding sustainable consumption behaviour. It has been revealed that the people are interested in buying sustainable products so as to protect the environment, to reduce the wastage. These results have been showed through Correlation, which indicates that there exists a positive correlation between variables taken for this study.

RECOMMENDATION

It is critical in tackling global environmental concerns and promoting for a more sustainable future. Individuals can contribute to the achievement of the United Nations' Sustainable Development Goals, which aim to build a more equal and sustainable world, through adopting sustainable consumption behaviours.

REFERENCES

[1] Biswas, A. (2017), A consumption value-gap analysis for sustainable consumption, *Environmental Science and Pollution Research*, 24(8), 7714–7723.

[2] Biswas, A., & Roy, M. (2005), Green products: An exploratory study on the consumer behavior in emerging economies of the East, *Journal of Cleaner Production*, Vol. 87, 463–468.

[3] Dimitrova, T., Ilieva, I., & Angelova, M. (2022), Exploring factors affecting Sustainable Consumption Behaviour, *Administrative Sciences*, Vol. 12, Issue 04, DOI: https://doi.org/10.3390/admsci12040155

[4] Fedrigo, D., & Hontelez, J. (2010), Sustainable consumption and production: An agenda beyond sustainable consumer procurement, *Journal of Industrial Ecology*, Vol. 14, Issue 01, 10–12.

[5] Fraj-Andres, E., & Martinez-Salinas, E. (2007), Impact of environmental knowledge on ecological consumer behaviour: An empirical analysis, *Journal of International Consumer Marketing*, Vol. 19, Issue 03, 73–102. DOI: https://doi.org/10.1300/J046v19n03_05

[6] Franzen, A., & Meyer, R. (2010), Environmental atitudes in cross-national perspective: A multilevel analysis of the ISSP 1993 and 2000, *European Sociological Review*, Vol. 26, Issue 02, 219–234. DOI: https://doi.org/10.1093/esr/jcp018

[7] Franzen, A., & Vogl, D. (2013), Two decades of measuring environmental attitudes: A comparative analysis of 33 countries, *Global Environmental Change*, Vol. 23, Issue 05, 1001–1008. DOI: https://doi.org/10.1016/j.gloenvcha.2013.03.009

[8] Kotler, P. and Keller, K. (2011) "Marketing Management" (14th edition), London: Pearson Education.

[9] Kumar, P. (2010) "Marketing of Hospitality & Tourism Services" Tata McGraw-Hill Education.

[10] Mande, S., & Taofeek, K.O. (2022), Effect of consumer behaviour on sustainable development (A case study of Unilever Nigeria PLC), *ESUT Journal of Management Sciences*, Vol. 15, Issue 01, 66–72

[11] Marquart-Pyatt, S.T. (2018), Trust and environmental activism across regions and countries, *Journal of Environmental Studies and Sciences*, 249–263. DOI: 10.1007/s13412-018-0498-1

[12] Minton, A.P., & Rose, R.L. (1997), The effects of environmental concern on environmentally friendly consumer behavior: An exploratory study, *Journal of Business Research*, Vol. 40, Issue 01, 37–48. DOI: https://doi.org/10.1016/S0148-2963(96)00209-3

[13] Oslo roundtable on sustainable production and consumption (1994). Retrieved May 2, 2010 from, http://www.iisd.ca/consume/oslo000.html

[14] Pagiaslis, A., & Krontalis, A.K. (2014), Green Consumption Behavior antecedents: Environmental Concern, Knowledge, and Beliefs, *Psychology & Marketing*, Vol. 31, Issue 05, 335–348. DOI: https://doi.org/10.1002/mar.20698

[15] Peter, J.P., & Olson, J.C. (2005). Consumer Behaviour and Marketing Strategy (7th ed). New York: McGraw-Hill/Irwin.

[16] Rizkalla, N. (2018), Determinants of Sustainable Consumption Behavior: An examination of consumption values, PCE Environmental Concern and Environmental Knowledge, *International Journal of Social Science and Humanity*, Vol. 08, Issue 02, 48–54. DOI: 10.18178/ijssh.2018.8.2.932

[17] Roberts, J.A., & Bacon, D.R. (1997), Exploring the subtle relationship between environmental concern and ecologically conscious consumer behavior, *Journal of Business Research*, Vol. 40, Issue 01, 79–89. DOI: https://doi.org/10.1016/S0148-2963(96)00280-9

[18] Saari, U.A., Damberg, S., Frombling, L., & Ringle, C.M. (2021), Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention, *Ecological Economics*, Vol. 189. DOI: https://doi.org/10.1016/j.ecolecon.2021.107155

[19] Wang, P., Liu, Q., & Qi, Y. (2014), Factor influencing sustainable consumption behaviors: A survey of the rural residents in China, *Journal of Cleaner Production*, Vol. 63, 152–165.

[20] Wakefield, S.E.L., Elliott, S.J., Eyles, J.D., & Cole, D.C. (2006), Taking Environmental Action: The role of local composition, context, and collective, *Environmental Management*, Vol. 37, 40–53. DOI: 10.1007/s00267-004-0323-3

[21] Xiao, J.J, & Li, H. (2011), Sustainable Consumption and Life Satisfaction Social Indicators Research, Vol. 104, 323–329. DOI: 10.1007/s11205-010-9746-9

Adoption of Sustainability Performance and Social Media Marketing for Business Growth

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Abstract

The use of social media has been steadily increasing in India as a result of widespread internet connectivity. This expansion has also benefited immensely from the Digital India program, supported by the Indian government. Social media marketing is an effective strategy for companies of all sizes to sway prospects and clients. Through numerous social media platforms like Instagram, Facebook, Twitter, Telegram, and Pinterest, customers may already communicate with brands. Social media marketing has the power to significantly advance a company's goals by creating committed brand advocates and even generating leads and revenues. However, not all companies are aware of the advantages of social media marketing. Most small businesses are not utilizing social media to enhance their operations. Because they can find other people discussing about a company or product on social media, today's consumers rush to look there when they want to learn more about it.108 samples were chosen from Panipat district respondents for the study's purposes. 108 respondents were included in the sample sizes that were chosen for the study. The adoption of sustainability performance and social media marketing for business growth will be examined in the study.

Keywords: *Social Media,Social Networking, Social Media Marketing,Sustainable Development.*

INTRODUCTION

Sustainability is a trait to maintain because it can last for a while. In recent years, the idea of sustainability has expanded beyond the challenges related to the management of natural and environmental resources. It is defined as a sustainable development that is related to various natural, political, social, or economic phenomena in various ways as a subset of the social sciences. Social media was just introduced in the new Digital Decade, which is defined by quick and reliable contact. Businesses profit greatly from staying in touch with potential customers while evaluating the greatest accessibility to these customers. Businesses that use social media to market their goods, deals, and services take into account the interests of their target market and tailor their promotions accordingly. In contrast to conventional marketing tactics, which are thought to be overly expensive, it enables reasonable studies of the market's needs. Due of businesses' competence, competency, and openness to their clients, social media

is increasingly accepted for marketing objectives. Utilizing social media to reach new target clients and convert their interests into sales has become possible thanks to digital technology.

Industry in the modern era is driven primarily by customer wants. People like to look at recommendations, reviews of Google search results, or websites before making a purchase. In order to follow the flow, it is crucial to understand what people think of us. Businessmen must actively engage in relevant communities in order to connect with and sway the public. They also need to use social media to interact with customers and maintain their online reputations. Social media marketing is crucial for expanding your customer base and expanding your business. Social media marketing is the process of increasing website traffic through social media platforms.

SOCIAL MEDIA MARKETING

Social media marketing is a tool that enables people to communicate with and market to a far larger audience than would have been feasible through traditional advertising methods by using online social networks to promote their websites, products, or services. Most significantly, social media places more focus on the group than the individual. On the Internet, there are communities of all sizes and kinds, and individuals communicate with one another. Social media marketers must appropriately utilize these communities in order to interact with group members about certain product and service offerings. Social media marketing also entails engaging with the groups as a corporate representative by listening to them and forging connections.

The Different Types of Social Media Platforms

- Social networking (Facebook, LinkedIn, Google+).
- Micro blogging (Twitter, Tumblr).
- Photo sharing (Instagram, Snapchat, Pinterest).
- Video sharing (YouTube, Facebook Live, etc.)

ROLE OF SOCIAL MEDIA

These have been reinterpreted for social media in the context of interactions on social media with the development of modern technology. As more organizations and their sustainable performance are linked with social as well as ecological development, new digital technology tends to enhance social media use among present and future generations, which has a substantial impact on the community and society. With interactions between businesses and their followers on social media, the research also attempts to uncover equality and new difficulties that have an impact on social and environmental accounting. As a result, with the advent of digital transformation, the impact of sustainability takes into account how successfully businesses, organizations, and society respond to difficulties on social media.

SUSTAINABLE DEVELOPMENT

Today, all nations of the world share the goal of sustainable development. The participation of individuals, groups, organizations, the public, and governments at the individual, local, regional, national, and international levels is required for sustainable development, which is an integrated and comprehensive approach. The aim of sustainable development is for the entire world, not just one area, region, or country. Additionally, this is not for the near future but rather for the far future. As a result, both spatially and temporally, its scope is exceedingly broad. People must behave locally while also thinking globally. Citizens who are aware and informed can use programs to reduce poverty successfully, resulting in their success. These individuals can responsibly promote environmental conservation in a variety of spheres of their lives. The introduction of mediated communication as a result of developments in information and communication technology enabled the process of developing relationships and spread concern for sustainable development. Through social media, one can share ideas, opinions, goods, services, and cultural practices with hundreds or even thousands of other individuals worldwide. Users of social media can now follow the involvement of their friends and coworkers in social movements and new ideas.

STATEMENT OF THE PROBLEM

The internet has transformed human life. All facets of human life have changed as a result of the internet revolution. It has altered how we do banking, education, entertainment, politics, and even international conflicts. Social media marketing is the most recent addition to internet marketing, which has helped businesses use their chosen marketing methods in new ways in recent years. Social media is typically thought of as a platform for online socializing and connecting with friends and family. While some organizations are having difficulty navigating the web, many organizations are using social media to share their success stories. Social media is being used by many businesses to promote their goods and services. The adoption of sustainability performance and social media marketing for business growth will be examined in the study. If there is a social media marketing issue, the appropriate advice should be given to resolve it and increase its efficacy.

SIGNIFICANCE OF THE STUDY

Due to people's lifestyles and highly established communication networks, industrialized countries are far ahead in social networking. India, a developing nation, is expected to make further advancements in the field of social networking in the upcoming years. The nation is seeing quick advancements in communication technologies. India is anticipated to surpass industrialized nations in terms of social media usage in the upcoming years. The business world is likewise preparing for this eventuality. Social media platforms make it simpler for businesses to connect with their customers. An emerging marketing strategy is social media marketing. Social media offers two-way communication, which is not possible with traditional

marketing techniques. Customers can communicate with the business through personal messages, comments, likes, and posts, among other means. Compared to traditional marketing methods, social media marketing can reach a larger audience. Social media marketing is not constrained by rules or limitations. Within a short period of time, it can reach everyone. Social networking is crucial for the corporate world of today. Social media marketing is ushering in a brand-new era of marketing.

REVIEW OF LITERATURE

Alsehani, Fayez & Wahid, Ainuddin & Shuib, Liyana (2023). Due to social, ecological, and rapidly changing environments, businesses have increased their involvement in sustainability. For organizations, the significant environmental influence on achieving sustainability is a major issue. Due to the vast number of social media users, social media is one of the key drivers in helping organizations deal with the many unfavorable environmental concerns that they face. Businesses use social media to achieve a variety of objectives, including knowledge sharing, relationship building, brand development, raising awareness, and gaining customer insights. Additionally, social media has a crucial role in affecting both the individual and collective sustainability performance of organizations. This study looked at the themes, functional areas, and strategies that organizations use in the social networking era to achieve their sustainability performance goals. We were able to determine the boundaries of the research domains by identifying the objectives and topics. The PRISMA declaration 2020 was approved in order to extract data from three recognized databases: Scopus, Web of Science, and Google Scholar, as well as to include and omit results from them. Using the VOSviewer software, the principal themes were identified using content analysis and the frequency of important phrases. Organizations and sustainability, corporate social responsibility, and social media were found to be the three main literary themes. The findings showed that during the previous ten years, few scholars have made significant contributions to the fields of social media and organizational sustainability performance. However, organizations have been promoting the use of social media for sustainable development because it is crucial for establishing high organizational sustainability performance. Additionally, organizations frequently use Twitter, a social media site, to advertise sustainable initiatives. The results of the study revealed that little research has been done on the unique idea of using social media to promote sustainability in organizations, and this might be further examined by researchers in subsequent studies.

Chatterjee, Sheshadri & Chaudhuri, Ranjan & Sakka, Georgia & Grandhi, Balakrishna & Galati, Antonino & Siachou, Evangelia & Vrontis, Demetris (2021). Communication, marketing, operations, and other business-related activities all benefit from social media marketing (SMM). Understanding the role of SMM in business sustainability in small and medium companies (SMEs) in a rising economy like India is of great interest to researchers, academics, and practitioners. Only a few research have made an effort to comprehend this role. Therefore, the purpose of this study is to investigate the effects of social media marketing

adoption for SMEs in emerging economies. The study also examines how SME leadership assistance influences the link between SMM usage and SMEs' ability to grow their businesses sustainably. A theoretical model is constructed after analyzing the literature and technology adoption model, and it is then validated by 304 samples of Indian SMEs that use various social media marketing tools in their businesses. This analysis is done utilizing a structural equation modeling technique. This study proved that SMM tools significantly and favorably enhance the long-term expansion of SMEs in a developing economy. The survey also discovered that the SME leadership team is crucial in promoting the use of SMM tools to help SMEs grow their businesses sustainably.

Mohammed, P. & Saleem, P. & Mohammed, Mr. (2021). The use of social media has been steadily increasing in India as a result of widespread internet connectivity. This expansion has also benefited immensely from the Digital India program, supported by the Indian government. The pandemic Covid-19 in 2020 provided many opportunity for people to use social media to gather information or to express themselves, and a number of diverse themes and conversations started trending in India. Social media marketing is an effective strategy for companies of all sizes to sway prospects and clients. Through numerous social media platforms like Instagram, Facebook, Twitter, Telegram, and Pinterest, customers may already communicate with brands. Business can accomplish exceptional success with social media marketing (SMM), which can create ardent brand advocates and even generate leads and sales. But not every company is aware of the advantages of social media marketing. Most small businesses are not utilizing social media to enhance their operations. Because they can find other people discussing about a company or product on social media, today's consumers rush to look there when they want to learn more about it.

OBJECTIVES OF THE STUDY

- The adoption of sustainability performance and social media marketing for business growth will be examined in the study.
- To determine which product or service is most suited for social media marketing.

RESEARCH METHODOLOGY

The current research article is descriptive and analytical in nature and serves as an example of a study. Participants in the study must be residents of Panipat. 108 respondents were included in the sample sizes that were chosen for the study. Convenient sampling is the method employed in this case.

The primary information has been gathered for the investigation. The basic respondents chosen by using a standardized questionnaire provided the primary data. The statistical and mathematical methods employed in this study include percentages and ranking systems. 108 samples were chosen from Panipat district respondents for the study's purposes. In order to ensure equal representation of men and women across all study fields, the samples were randomly chosen to include one male and one female from each class.

ANALYSIS AND INTERPRETATION

Table 1: Gender Wise Distribution

Gender	*No. of respondents*	*Percentage*
Male	60	57.14
Female	48	44.44
Total	108	100

Table 1 shows that the total respondents 108. The table show that male 57.14% and female respondents 44.44%.

Table 2: Classification on the Basis of Internet Access

Particulars	*Number of Respondents*	*Percentages*
Respondents with internet access	106	98.14%
Respondents without internet access	2	1.85%
Total	108	100

106 respondents out of the total have access to the internet on their own phone or computer. Only two respondents do not have direct access to the internet.The ability for people and organizations to connect to the global web is known as internet access. The majority of respondents have internet access. Without direct internet access, it can be presumed that respondents will use friends, family, or an internet café to access the internet.

Table 3: Classification on the Basis of Social Media Access

Particulars	*Number of Respondents*	*Percentages*
Social media access	54	100
No social media access	0	0
Total	108	100

For learning, marketing, shopping, and other purposes, all respondents have access to or utilize various social media platforms. Social media is extremely popular with young people all over the world. The majority of young adults utilize social media, according to the survey.

Table 4: Classification of Social Media Websites Used by the Respondents

Particulars	*Number of Respondents*	*Percentages*
Facebook	56	51.8
Twitter	8	7.4
LinkedIn	8	7.4
Google plus	0	0
Instagram	36	33.3
Total	108	100

Out of the total respondents, it is shown that 51.8% of respondents use Facebook 56, almost 33.3% use Instagram 36, and approximately 7.4% of respondents use Twitter and LinkedIn.According to the current report, the majority of people use Facebook, Instagram,

and then twitter. Among the responders, Google Plus and LinkedIn are not particularly well-liked.

Table 5: Importance of Social Media as an Emerging Marketing Tool

Responses	*Number of Respondents*	*Percentages*
Always	82	75.9
Sometimes	20	18.5
Never	6	5.5
Total	108	100

An emerging marketing trend is social media. 75.9% of respondents, or a majority, believe that social media is a new marketing tool. Social media is a powerful and affordable marketing tool.

Table 6: Product or Service Most Suitable for Social Media Marketing

Products	*Number of Respondents*	*Percentages*
Tangible	80	74.5
Intangible	6	5.5
Both	22	20.3
Total	108	100

Out of all respondents, 74.5% (80) of them think that tangible goods are most suited for social media marketing. According to 20.3% (22) of respondents, both tangible and immaterial products are appropriate for social media marketing. Only 5.5% (6) of respondents think social media is a better channel for marketing intangible goods or services.

CONCLUSION

The business world of today, from little businesses to large, powerful corporations, is greatly impacted by social media. The use of social media is significant, and technology and the system are constantly evolving. Social media use and presentation by businesses has many advantages. Some firms felt the effects negatively. Social networking is becoming an absolute need, especially for companies that engage directly with customers. Social media has both many opportunities and difficulties. The company must therefore get ready to deal with this.

Through social media, one can share ideas, opinions, goods, services, and cultural practices with hundreds or even thousands of other individuals worldwide. Social media can be useful in achieving the objectives of sustainable development, even though it is an integrated and all-encompassing approach that requires the participation of people, groups, organizations, the public, and governments at the individual, local, regional, national, and international levels. Only when information and technology are successfully shared, populations are motivated and committed to success, and development programs can reach their full potential. Social media platforms like Facebook, YouTube, and Twitter may be equally useful for environmental groups to access user thought space in order to do this.

The study finds that individuals are becoming more computer literate, which is the primary cause of the increased importance of online marketing. They have realized how beneficial the internet is for their range of needs, particularly social networking, online shopping, and media sharing (picture, audio, and video). Their propensity to be online has increased due to the effectiveness of the internet. Consumers today strongly believe that every business should leverage this effectiveness to bolster its marketing initiatives. The potential of online marketing to facilitate communication between consumers and advertisers, as well as the accessibility of a broad variety of information and simplicity of shopping, are its main advantages. Online marketing is superior to conventional marketing because of these advantages.

However, customers are also concerned about the user-safety aspects of the internet. Online marketing, in their opinion, is risky because it might increase fraud and privacy concerns. In fact, social media marketing is a newer form of advertising that, when done well, may reach a larger audience than conventional methods.

REFERENCES

[1] Alalwan, A.A., Rana, N.P., Dwivedi, Y.K., & Algharabat, R. (2017). Social media in marketing: A review and analysis of the existing literature. *Telematics and Informatics*, 34(7), 1177–1190.

[2] Alsehani, Fayez & Wahid, Ainuddin & Shuib, Liyana (2023). Exploring Social Media and Organisational Sustainability Performance Goals: Themes, Functional Areas, and Practices Learning from the Preceding Decade. *Sustainability*, 15, 2115. 10.3390/su15032115.

[3] Assaad, W., & Gómez, J.M. (2011). Social network in marketing (social media marketing) opportunities and risks. *International Journal of Managing Public Sector Information and Communication Technologies*, 2(1), 13.

[4] Bajpai, V., Pandey, S., & Shriwas, S. (2012). Social media marketing: Strategies & its impact. *International Journal of Social Science & Interdisciplinary Research*, 1(7), 214–223.

[5] Chatterjee, Sheshadri & Chaudhuri, Ranjan & Sakka, Georgia & Grandhi, Balakrishna & Galati, Antonino & Siachou, Evangelia & Vrontis, Demetris (2021). Adoption of Social Media Marketing for Sustainable Business Growth of SMEs in Emerging Economies: The Moderating Role of Leadership Support. *Sustainability*, 13. 12134. 10.3390/su132112134

[6] Constantinides, E. (2014). Foundations of social media marketing. *Procedia-Social and behavioral sciences*, 148, 40–57.

[7] Dwivedi, Y.K., Kapoor, K.K., & Chen, H. (2015). Social media marketing and advertising. *The Marketing Review*, 15(3), 289–309.

[8] Erdoðmuþ, Ý.E., & Cicek, M. (2012). The impact of social media marketing on brand loyalty. *Procedia-Social and Behavioral Sciences*, 58, 1353–1360.

[9] Felix, R., Rauschnabel, P.A., & Hinsch, C. (2017). Elements of strategic social media marketing: A holistic framework. *Journal of Business Research*, 70, 118–126.

[10] Kaur, S. (2016). Social media marketing. *Asian Journal of Multidimensional Research* (*AJMR*), 5(4), 6–12.

[11] Kumar, V., & Mirchandani, R. (2012). Increasing the ROI of social media marketing. *MIT sloan management review*, 54(1), 55.

[12] Mohammed, P. & Saleem, P. & Mohammed, Mr. (2021). Social Media Marketing: Sustainable Business Growth.

[13] Nadaraja, R., & Yazdanifard, R. (2013). Social media marketing: Advantages and disadvantages. Center of Southern New Hempshire University, 1–10.

[14. Stephen, A.T. (2016). The role of digital and social media marketing in consumer behavior. *Current opinión in Psychology*, 10, 17–21.

SECTION 4

ENTREPRENEURIAL INNOVATIONS FOR SUSTAINABLE BUSINESSES

Exploring the Dimensions of Corporate Social Responsibility: A Bibliometric Analysis

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Abstract

This study utilizes a comprehensive dataset spanning from 2010 to 2023, comprising 372 documents sourced from 185 different journals, books, and other relevant sources. The dataset's annual growth rate of publications is found to be 36.29%, indicating a substantial increase in research output over time. The average age of the documents is relatively recent at 2.29 years, indicating the inclusion of up-to-date publications. Each document, on average, has received approximately 15.72 citations, indicating a considerable impact within the scholarly community. The references section contains a substantial number of references, totaling 26,241, highlighting the extensive breadth of research encompassed in the dataset. This research utilizes a comprehensive and diverse dataset, representing a significant period and a wide range of sources. The dataset's high average citation count demonstrates the influence and impact of the research. Collaborative research, including international collaborations, is prominent, highlighting global engagement in CSR research. The inclusion of various document types reflects the breadth of research outputs within the field of CSR.

Keywords: *Corporate Social Responsibility, Bibliometric Analysis and Graphic Analysis.*

INTRODUCTION

Corporate social responsibility (CSR) refers to a company's commitment to operating in an economically, socially, and environmentally sustainable manner while balancing the interests of diverse stakeholders. This includes taking responsibility for the impact of its activities on customers, employees, shareholders, communities, and the environment. CSR involves going beyond legal compliance to actively promote positive social and environmental change. Many companies now view CSR as an essential part of their business strategy, recognizing that it can lead to long-term benefits such as improved reputation, increased customer loyalty, and enhanced employee engagement.

According to the European Commission, CSR is defined as "the responsibility of enterprises for their impacts on society". CSR involves companies taking responsibility for the impact of their activities on customers, employees, shareholders, communities, and the environment. This includes going beyond legal compliance to actively promote positive social and environmental change. Many companies now view CSR as an essential part of

their business strategy, recognizing that it can lead to long-term benefits such as improved reputation, increased customer loyalty, and enhanced employee engagement.

CSR is an important business strategy that can lead to long-term benefits for companies, such as improved reputation, increased customer loyalty, and enhanced employee engagement. Secondly, CSR is becoming increasingly relevant in the business world, and companies are expected to take responsibility for their impact on society and the environment. Thirdly, there is a growing body of research that investigates the relationship between CSR and other variables, such as profitability, business performance, and the characteristics of the board of directors. Finally, studying CSR can help us to understand how companies can operate in an economically, socially, and environmentally sustainable manner while balancing the interests of diverse stakeholders.

In his exploration of the evolving concepts, Carroll (1991) built upon economist Milton Friedman's notion of responsibility, which emphasized adherence to societal rules encompassing both legal and ethical customs (Friedman, 1970, as cited in Carroll, 1991). Carroll expanded on this idea by identifying and delineating four fundamental categories: economic, legal, ethical, and discretionary (Carroll, 1991). Furthermore, scholars and analysts seeking to examine business-society relations benefited from Carroll's framework, which enabled the consideration and evaluation of corporate social responsibility (CSR) claims (Carroll, 1991).

CSR has been a topic of discussion in the business realm for several decades, with its roots traced back to the Great Depression debate between Berle and Dodd, as documented in a series of articles in the Yale Law Review. Berle argued that responsibility should be understood as "Corporate powers as powers in trust" (Berle, 1931, p. 1049) with a focus on shareholders. In response, Dodd questioned, "For whom are corporate managers trustees?" (Dodd, 1932, p. 1145), contending that corporate managers should act as statesmen and utilize their powers for the betterment of society (Sommer, 1991). This debate progressed into the 1950s when Bowen published his influential work, "The Social Responsibilities of the Businessman" (Bowen, 1953), advocating for businesses to go beyond economic management and consider broader societal impacts and needs. In the subsequent decade, Davis introduced the concept of the "Iron Law of Responsibility," asserting that the social responsibilities of businessmen should align with their social power (Davis, 1960, p. 71). The discussions on business and society continued to evolve, encompassing a wider range of concerns and involving various stakeholders, which led to some ambiguity surrounding the term CSR.

RESEARCH OBJECTIVES

The research objectives of this study are given below**:**

- To analyze the annual trend in publications about corporate social responsibility (CSR) by examining the number of published articles on this topic over a specified period.
- To identify the author(s) and journal(s) that have made significant contributions to research on corporate social responsibility (CSR) by assessing the impact and relevance of their published work.

- To determine the research area(s) that have published the most work on corporate social responsibility (CSR) and the prevalent document type(s) utilized in these publications.
- To identify the most prominent publication affiliation(s) for papers on corporate social responsibility (CSR) by investigating the institutions or organizations associated with the highest number of publications in this field.
- To ascertain which countries are at the forefront of publishing papers on corporate social responsibility (CSR) by examining the distribution and concentration of publications across different nations.
- To investigate the keyword and citation networks related to corporate social responsibility (CSR) by analyzing the co-occurrence of keywords in published articles and examining the citation patterns between relevant research papers in this field.

THEORETICAL BACKGROUND

In the 1990s, the concept of Corporate Social Responsibility (CSR) underwent significant academic development. One noteworthy contribution was made by Donna J. Wood in 1991 when she revisited Carroll's corporate social performance model from 1979, which had been reviewed by Wartick and Cochran in 1985 (Carroll, 1999). Wood sought to establish connections between corporate social performance and other theories in organizational studies, such as organizational institutionalism, stakeholder management theory, and social issues management theories. In her work, Wood expanded the corporate social performance framework by incorporating various theoretical traditions.

Carroll's original model of corporate social performance was transformed by Wartick and Cochran (1985) into general principles, processes, and policies. Wood (1991) further refined these principles, formulating them into three basic principles. The first principle aligned with Carroll's CSR dimensions (economic, legal, ethical, and discretionary) and linked them to social legitimacy (institutional level), public responsibility (organizational level), and managerial discretion (individual level). The second principle introduced the processes of social responsiveness, which went beyond Carroll's categorization and encompassed environmental assessment, stakeholder management, and issues management. The third principle reorganized Wartick and Cochran's policies and Carroll's social issues category into a new framework focused on the outcomes or outputs of corporate behavior.

Wood's model provided a more comprehensive depiction of corporate social performance compared to previous versions. It viewed the firm as the central actor responsible for actions that impact stakeholders, society, and itself (Wood, 2010). In the mid-1990s, the rise of the internet and related technologies enhanced global communication capabilities, enabling institutions to exert greater pressure on companies to prioritize CSR. This shift was reinforced by the recognition that intangible assets, such as goodwill, reputation, and human capital, constituted a significant portion of a company's value (Waddock, 2008). Consequently, the importance of CSR increased.

During this period, CSR became closely associated with strategy literature, and its link to market outcomes became more explicit (Orlitzky et al., 2003; Porter and Kramer, 2006). The evolving landscape highlighted the intertwined nature of CSR with organizational strategy and its impact on business performance and reputation.

RESEARCH METHODOLOGY

This study employs a systematic literature review to analyze publications related to Corporate Social Responsibility (CSR) Scopus database was used. Inclusion and exclusion criteria were established to ensure the selection of relevant papers meeting specific criteria. Inclusion criteria encompassed papers specifically focused on CSR and containing keywords such as "CSR," "Corporate Social Responsibility," "Sustainable Responsibility," "Sustainable Development," and "Social Responsibility." The fields of finance, business and marketing, and banking and finance were targeted for inclusion. Only original research papers written in English were considered. Exclusion criteria involved the exclusion of papers unrelated to CSR and the removal of duplicate papers. A comprehensive search was conducted using reputable academic databases, including PubMed, Scopus, Web of Science, and Google Scholar. Search terms were varied combinations of the inclusion criteria keywords. Data extraction involved reviewing and extracting relevant information such as publication year, author(s), journal, affiliation, document type, citation count, and keywords. The extracted data were analyzed to identify trends, patterns, and relationships within the included papers. Quality assessment ensured the rigor, relevance, and contribution of the selected papers to the CSR field. The study aims to provide a comprehensive analysis of CSR-related publications in finance, business and marketing, and banking and finance by following this research methodology.

RESULT AND DISCUSSION

The dataset utilized in this study covers a timespan from 2010 to 2023, allowing for a comprehensive examination of the literature on the topic of interest. The data was sourced from 185 different sources, including journals, books, and other relevant publications. A total of 372 documents were included in the analysis, representing a significant sample size for the study. The annual growth rate for the data is calculated at 36.29%, indicating a steady increase in research output and interest in the field of study over the years. On average, the documents in the dataset have an age of 2.29 years, reflecting the inclusion of recent publications in the analysis. The average number of citations per document is 15.72, highlighting the impact and influence of the selected documents within the scholarly community. The references section of the documents consists of a total of 26,241 references, indicating a thorough examination of the existing literature and a robust foundation for the analysis. In terms of document contents, the dataset includes 813 Keywords Plus (ID) and 1,204 Author's Keywords (DE), providing valuable insights into the specific topics and areas covered in the literature.

The dataset involves the contributions of 977 authors, indicating a diverse range of perspectives and expertise within the field. Out of the 372 documents, 69 were single-

authored, while the remaining 303 documents involved collaboration among multiple authors. On average, each document had 2.87 co-authors, reflecting the prevalence of collaborative research in the field.

Furthermore, approximately 28.49% of the collaborations included international co-authorships, suggesting global participation and exchange of ideas within the research community.

The dataset consists of various document types, including 282 articles, 6 books, 34 book chapters, 19 conference papers, 1 editorial, 2 notes, 27 reviews, and 1 short survey. The inclusion of multiple document types enhances the breadth and depth of the analysis, encompassing different forms of scholarly contributions in the field.

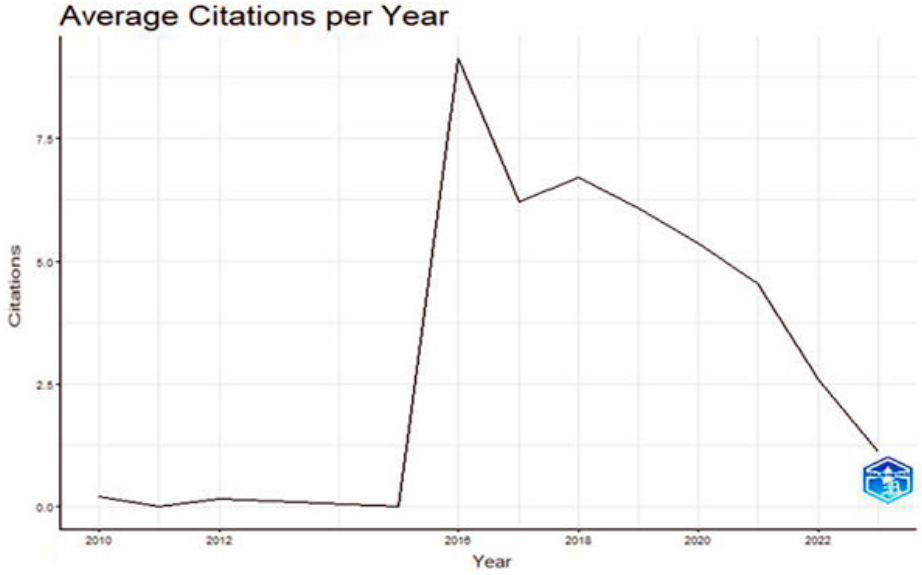


Figure 1: Average Citations Per Year

The provided table displays the mean number of total citations per article, the number of articles (N), the mean number of citations per year, and the number of citation years for each respective year. The data spans from 2010 to 2023, providing insights into the trend of citations over time. In 2010, there was only one article with a mean of 3 total citations, indicating a relatively low citation impact. In 2011 and 2015, there were no citations recorded, suggesting limited research activity or impact in those years. In 2016, the average number of total citations per article increased significantly to 73, indicating a notable increase in research visibility and impact. The trend continued in 2017 and 2018, with relatively high mean citation counts per article (43.5 and 40.17, respectively), indicating sustained research interest and influence. From 2019 onwards, the mean citation counts per article gradually decreased, indicating a potential decline in research impact over time. The number of citable years decreased progressively from 14 in 2010 to 1 in 2023, suggesting a shorter lifespan of research influence. The trend in citation counts per year demonstrates a period of increased research impact in the mid-2010s, followed by a gradual decline in subsequent years. However,

it is important to note that the interpretation of these trends should consider other factors, such as the size of the dataset and the specific field of study.

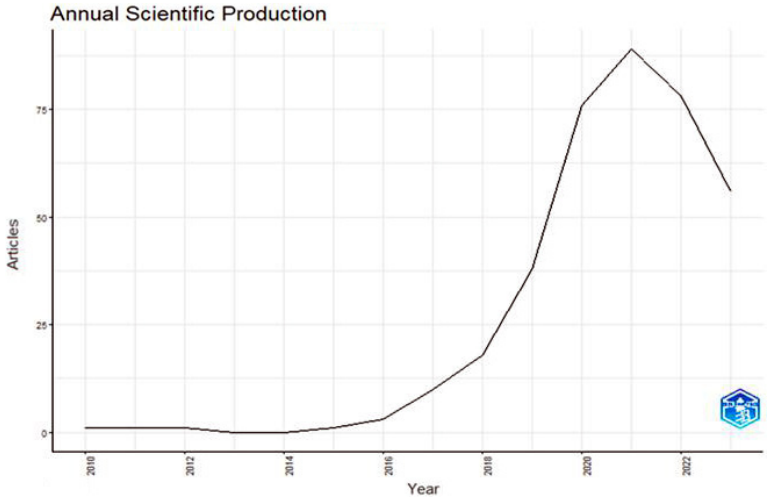


Figure 2: Annual Scientific Production

The distribution of documents on Corporate Social Responsibility (CSR) based on publication years reveals interesting patterns. The analysis begins with only one document published in 2010, followed by one document each in 2011 and 2012. The years 2013 and 2014 saw no publications in this field. However, in 2015, there was a resurgence with one document. The subsequent years witnessed a steady increase in publications, with three in 2016, followed by 10 in 2017, 18 in 2018, and 38 in 2019. The trend continued to rise significantly in 2020 with 76 publications, reaching a peak in 2021 with 89 publications. In 2022, the number slightly declined to 78, and in the current year, 2023, there have been 56 publications so far. These numbers demonstrate the growth and increasing scholarly interest in studying CSR over the past decade, with substantial research output in recent years.

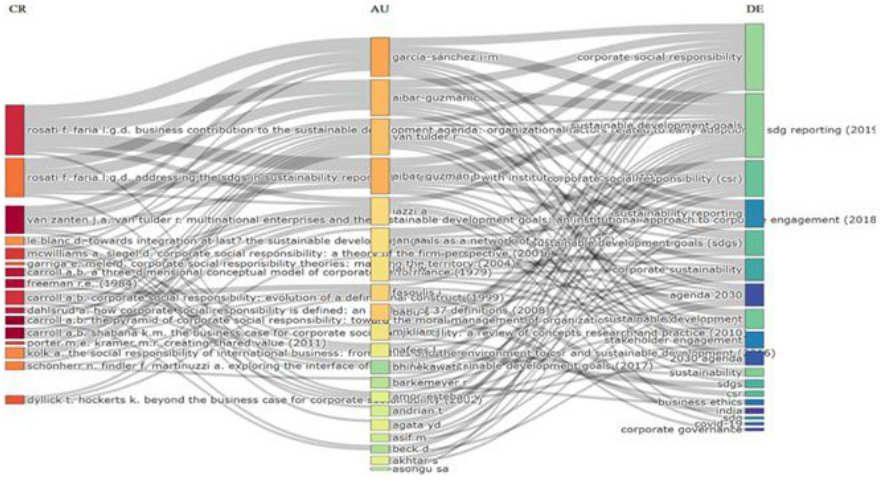


Figure 3: Threefold Plots

A three-fold plot in the bibliometric analysis of CSR provides a comprehensive visual representation of key bibliometric indicators and trends related to Corporate Social Responsibility research. The three-fold plot in the bibliometric analysis of CSR provides a comprehensive overview of publication output, citation impact, and collaboration patterns within the field. It helps researchers gain a deeper understanding of the dynamics and trends in CSR research, facilitating informed decision-making and future research directions.

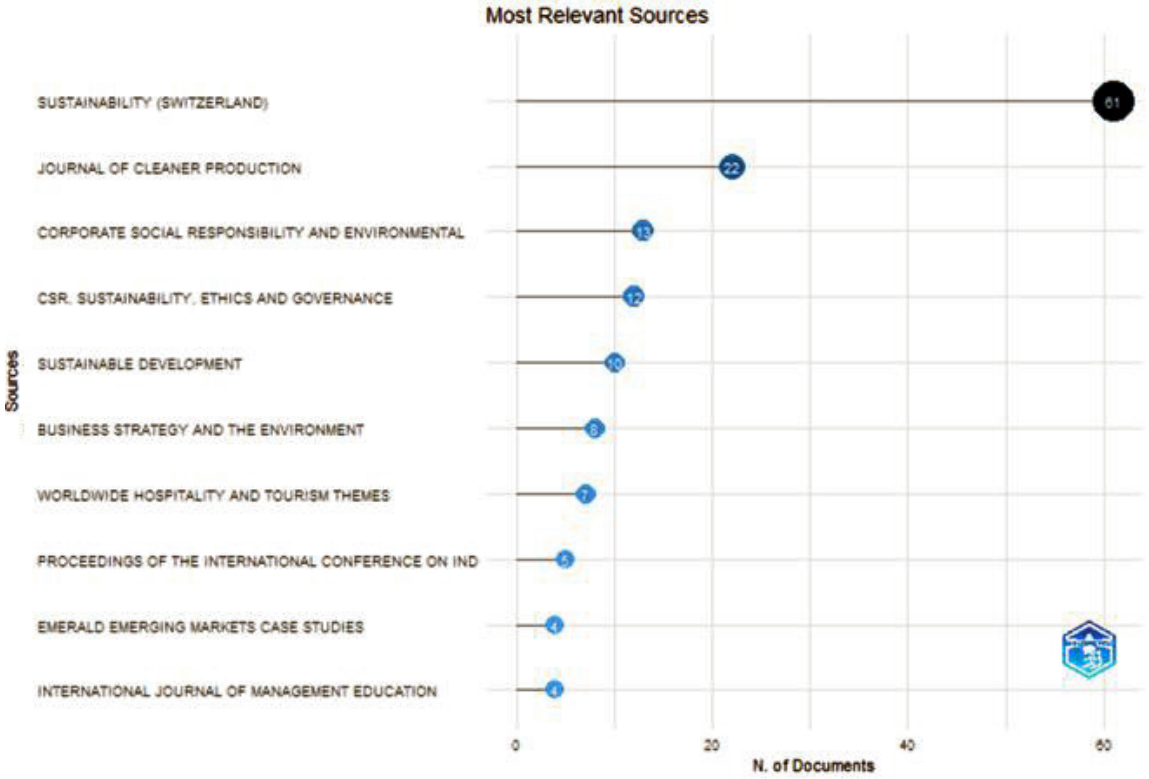


Figure 4: Most Relevant Sources

The most prominent source is the journal Sustainability (Switzerland), which contributed 61 articles to the dataset. Following that, the Journal of Cleaner Production provided 22 articles, while Corporate Social Responsibility and Environmental Management contributed 13 articles. Other sources such as CSR, Sustainability, Ethics and Governance, Sustainable Development, and Business Strategy and the Environment also made notable contributions with 12, 10, and 8 articles, respectively. Several sources, including Worldwide Hospitality and Tourism Themes, Proceedings of the International Conference on Industrial Engineering and Operations Management, and Emerald Emerging Markets Case Studies, provided a smaller number of articles ranging from 4 to 7. Furthermore, sources like the International Journal of Management Education, Social Responsibility Journal, and Business Strategy and Development contributed 4 articles each, while several other sources had 3 articles each.

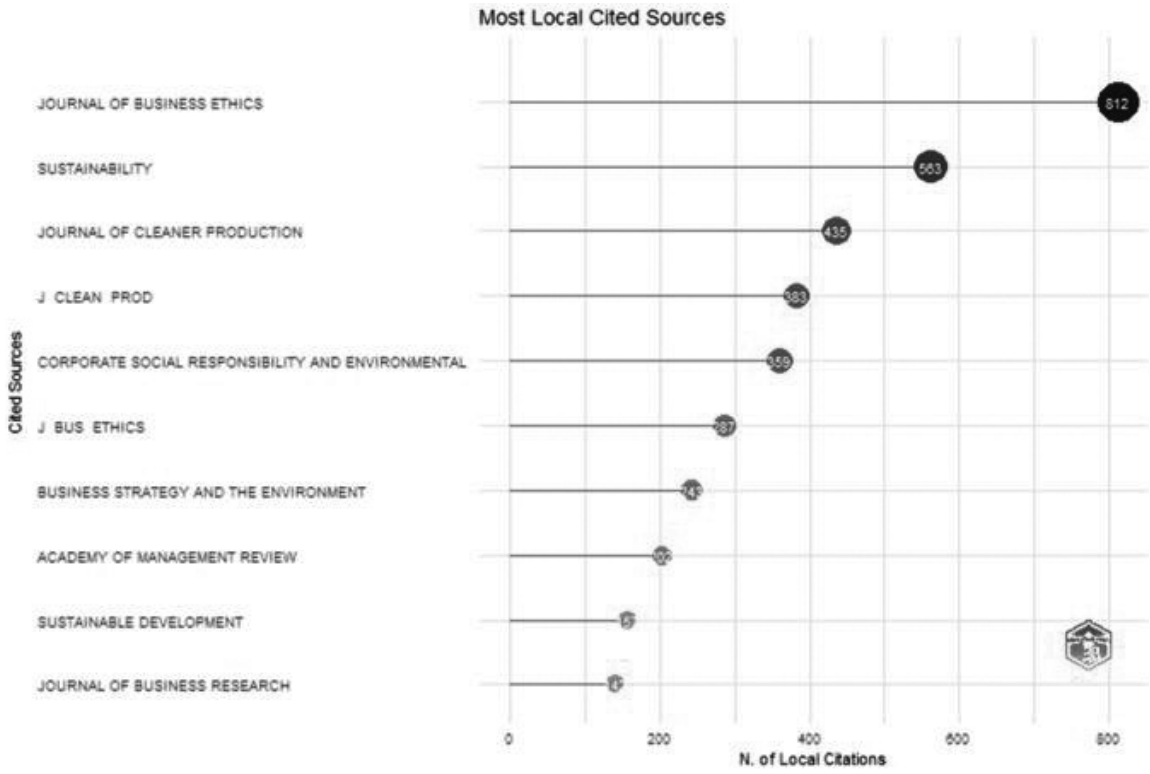


Figure 5: Most Local Cited Source

Among the sources, the Journal of Business Ethics stands out with the highest number of articles, totaling 812. Sustainability follows closely with 563 articles, while the Journal of Cleaner Production and J Clean Prod contribute 435 and 383 articles, respectively. Corporate Social Responsibility and Environmental Management also make a significant contribution with 359 articles, and the Journal of Business Ethics (abbreviated as J Bus Ethics) adds 287 articles. Other notable sources include Business Strategy and the Environment with 243 articles, Academy of Management Review with 202 articles, and Sustainable Development with 157 articles. The Journal of Business Research, Corporate Social Responsibility and Environmental Management (abbreviated as Corp Soc Responsibil Environ Manag), Academy of Management Journal, and Accounting also provides a substantial number of articles ranging from 104 to 142. The remaining sources in the table, including Strategic Management Journal, Journal of International Business Studies, Harvard Business Review, Business & Society, Journal of Management Studies, and many others, contribute varying numbers of articles to the dataset. The sources used for retrieving articles on CSR cover a wide range of journals and publications. The table reflects the diverse array of sources that have contributed to the literature on CSR, with the Journal of Business Ethics being the primary source in terms of the number of articles. These sources collectively form the foundation for the research analysis, ensuring a comprehensive representation of the existing knowledge in the field of CSR.

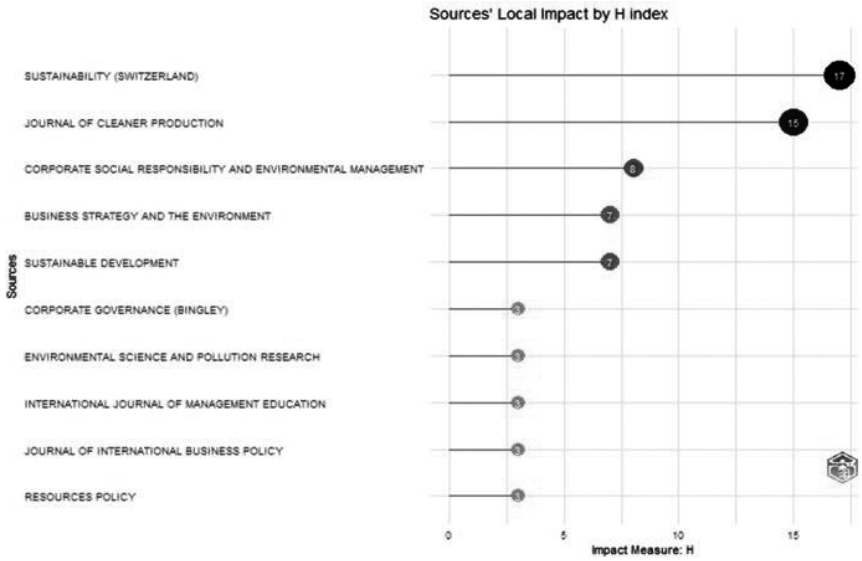


Figure 6: Source's Local Impact by H Index

The h-index represents the number of publications with at least h citations. The g-index indicates the highest number of articles that together have received g2 citations. The m-index represents the average value of the h-index and g-index. These metrics provide insights into the impact and productivity of the sources in terms of citations received. The figure also includes the total number of citations (TC) received by the articles from each source and the corresponding number of publications (NP) attributed to the source. These figures provide an understanding of the overall citation impact and productivity of the sources. Additionally, the starting year of publication for each source is provided, indicating when the source began publishing articles in the field of CSR.

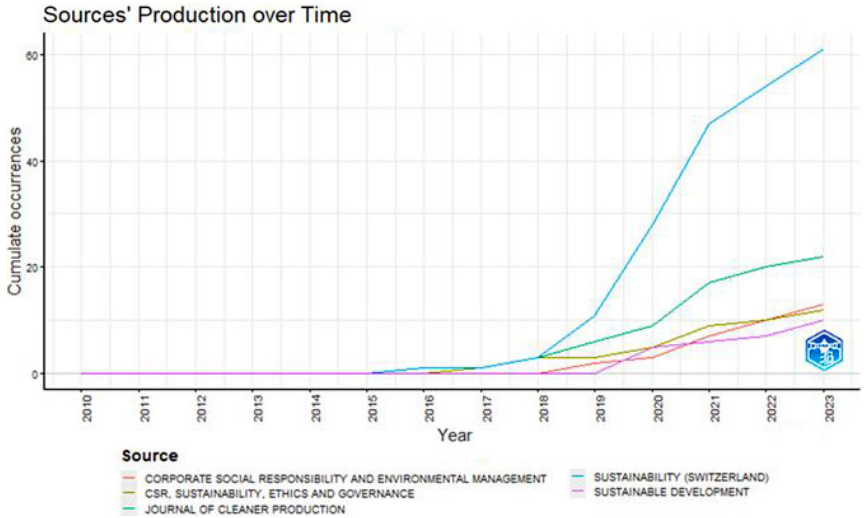


Figure 7: Source's Production over Time

The figure provides a breakdown of the number of articles published in different years from specific sources in the field of Corporate Social Responsibility (CSR). The sources include Sustainability (Switzerland), Journal of Cleaner Production, Corporate Social Responsibility and Environmental Management, CSR, Sustainability, Ethics and Governance, and Sustainable Development.

From 2010 to 2015, none of the sources published any articles in the field of CSR. However, starting in 2016, there was a gradual increase in publications across all sources. Sustainability (Switzerland) and the Journal of Cleaner Production each published one article in 2016. In 2017, the number of articles increased slightly, with Sustainability (Switzerland), Journal of Cleaner Production, and CSR, Sustainability, Ethics, and Governance contributing one article each. Sustainable Development did not publish any articles during this period.

From 2018 onwards, there was a notable increase in the number of articles published by all sources. Sustainability (Switzerland) and the Journal of Cleaner Production witnessed a steady growth in publications, with 61 and 22 articles respectively in 2023, making them the most prolific sources in the dataset. Corporate Social Responsibility and Environmental Management gradually increased their publications, reaching 13 articles in 2023. CSR, Sustainability, Ethics and Governance, and Sustainable Development also experienced growth in the number of articles published, but at a slower pace.

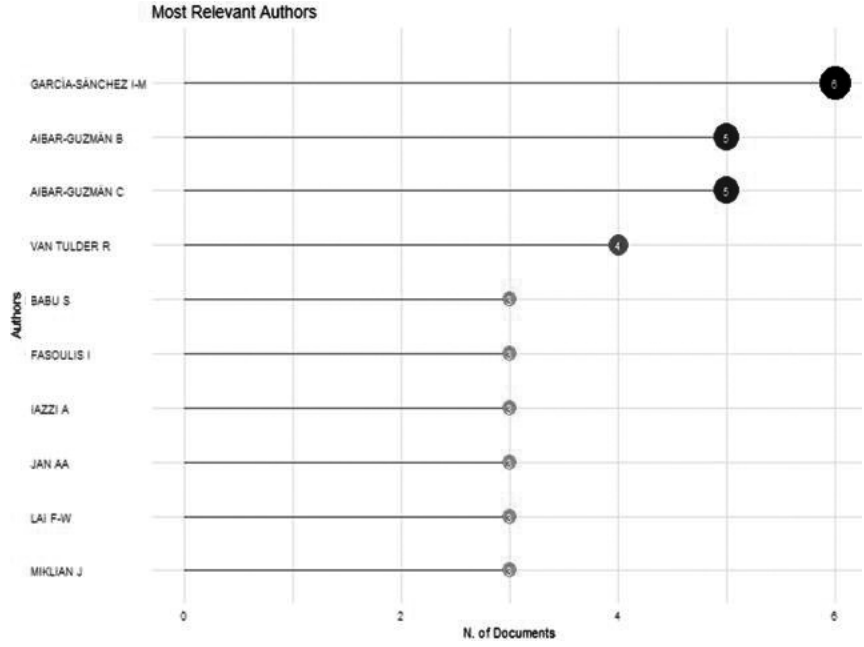


Figure 8: Most Relevant Authors

Authors such as García-Sánchez I-M, Aibar-Guzmán B, Aibar-Guzmán C, and Van Tulder R have authored multiple articles, with their contributions ranging from 4 to 6 articles. The fractionalized value represents the relative contribution of each author in terms of their participation in the overall number of articles. For example, García-Sánchez I-M has a

fractionalized value of 1.583, indicating their involvement in approximately 1.58 articles on average. Other authors such as Babu S, Fasoulis I, Iazzi A, Jan AA, Lai F-W, and Miklian J have contributed to 2 to 3 articles, with corresponding fractionalized values ranging from 0.73 to 2.5. These authors have varying degrees of contribution, with some involved in a significant portion of the articles published in the field of CSR. The table also includes authors who have contributed to a single article or a limited number of articles, with their fractionalized values reflecting their relative participation in the dataset. Overall, the table provides insights into the contribution and involvement of specific authors in the field of CSR, highlighting their impact and presence in the literature.

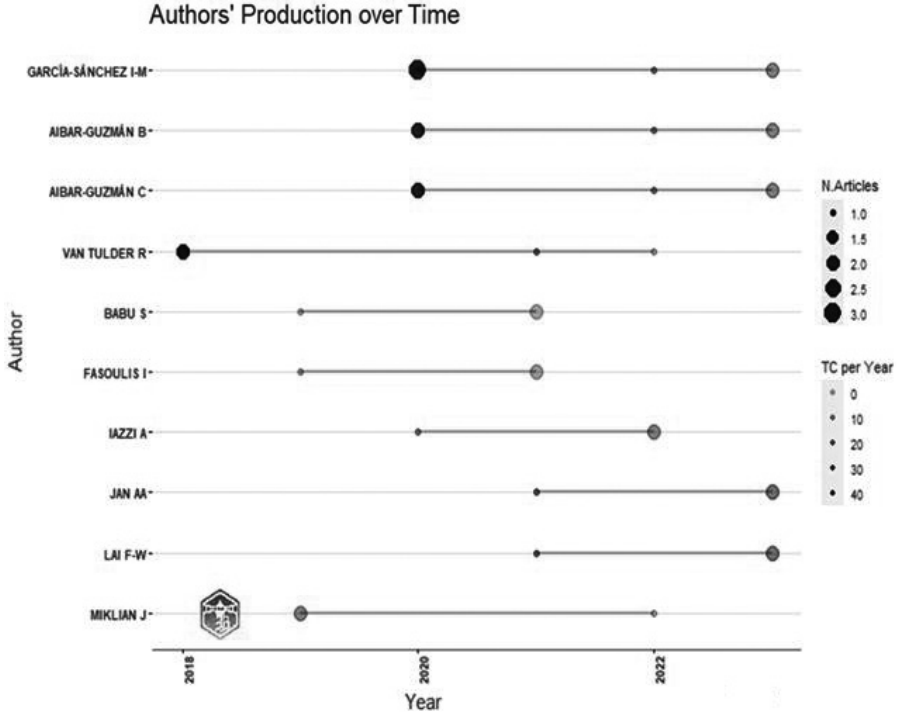


Figure 9: Author's Production over Time

The figure provides information on the publication records of various authors in the field of Corporate Social Responsibility (CSR) over time. The figure presents a range of authors who have contributed articles on diverse topics related to CSR. Each author's publications are listed chronologically, allowing for an overview of their research output over time. For example, García-Sánchez I-M has published articles over multiple years, covering topics such as stakeholder engagement, the integration of Sustainable Development Goals (SDGs) into non-financial information systems, and the influence of institutional investors on corporate transparency regarding the SDGs. The data provide insights into the citation impact of each article with the TC and TCpY metrics. Other authors, such as Aibar-Guzmán C and B, and Van Tulder R, have also contributed multiple articles over the years, addressing various aspects of CSR and sustainable development. The figure highlights the diversity of research topics within

the field of CSR, ranging from gender diversity, communication strategies, and corporate governance, to the impact of SDGs on different industries. It provides a comprehensive view of the research production of these authors, allowing readers to identify patterns and areas of expertise.

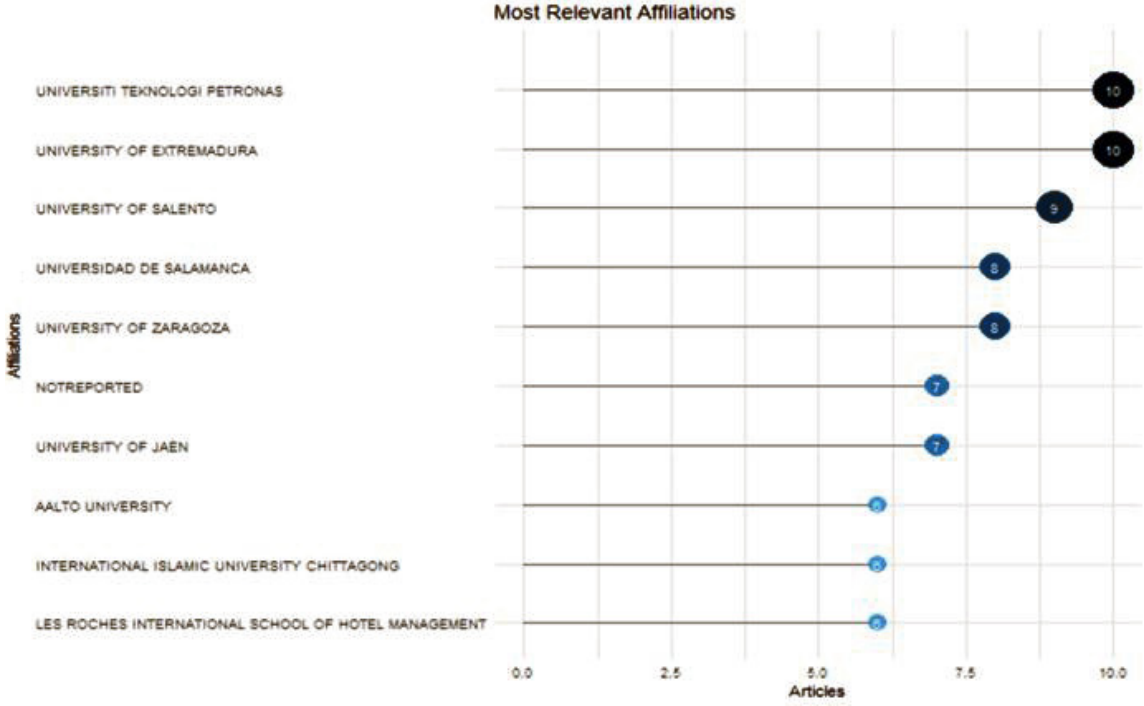


Figure 10: Most Relevant Affiliation

For the University of Extremadura, there is no recorded article production from 2010 to 2019. However, starting from 2019, the affiliation contributed four articles, and the number increased to 10 articles in 2021, 2022, and 2023, showcasing a significant growth in research output. Similarly, the Universidad de Salamanca did not have any recorded articles from 2010 to 2019. However, starting in 2020, the affiliation contributed five articles, which further increased to six articles in 2022 and eight articles in 2023. The University of Salento had no recorded articles until 2020, after which it contributed three articles. The number increased to nine articles in 2023, indicating a notable growth in research productivity. Lastly, Universiti Teknologi PETRONAS did not have any recorded articles until 2021 when it contributed two articles. The number increased to four articles in 2022 and further rose to 10 articles in 2023, demonstrating a substantial increase in research output. The figure reveals the research productivity trends for these affiliations in the field of CSR, highlighting the recent surge in article production for some institutions. It showcases the efforts and contributions of these affiliations in advancing knowledge and understanding in the domain of CSR.

The publication trend for the three universities and their respective years is as follows: the University of Extremadura had no publications from 2010 to 2018, with an increase in

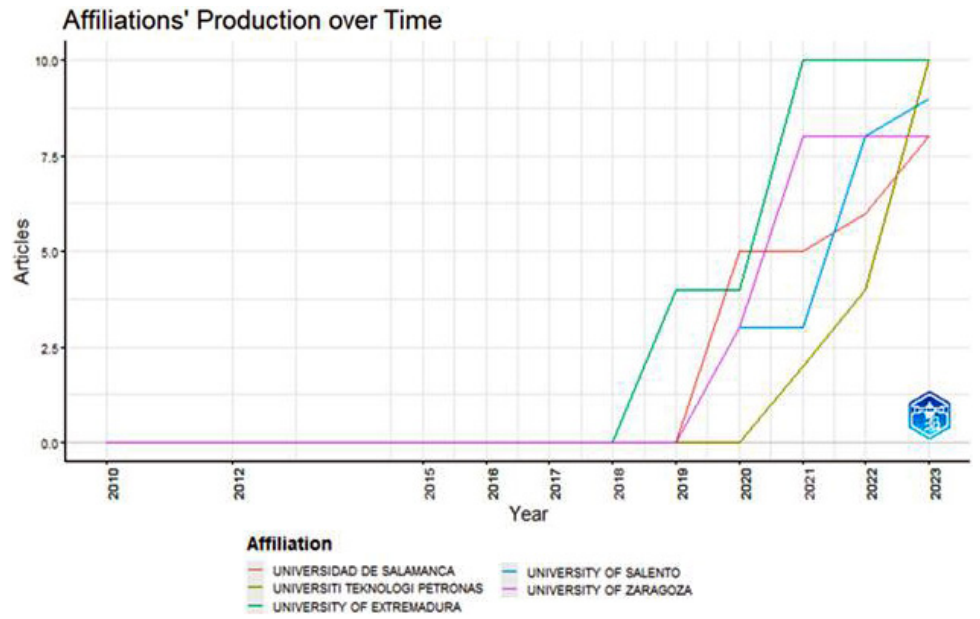


Figure 11: Affiliation's Production over Time

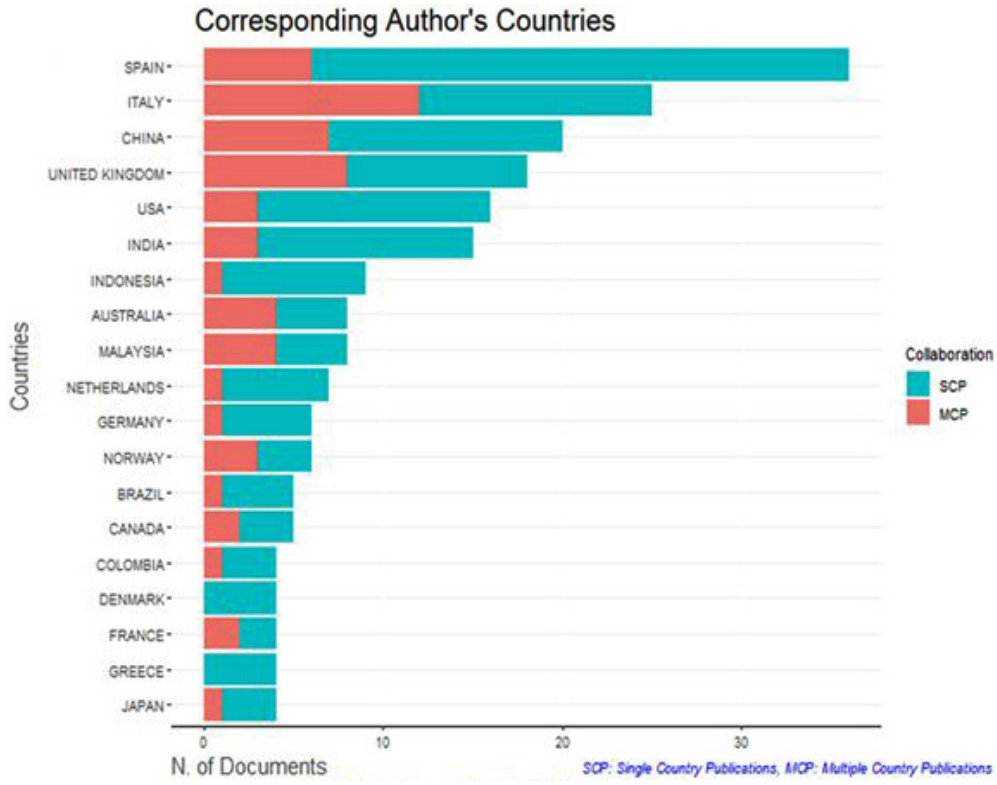


Figure 12: Corresponding Author's Countries

publications from 2019 (4), reaching 10 publications in 2021, 2022, and 2023. Universidad de Salamanca had no publications from 2010 to 2018, no publications in 2019, and an increase in publications from 2020 (5), reaching 8 publications in 2023. The University of Salento had no publications from 2010 to 2019, with an increase in publications from 2020 (3), reaching 9 publications in 2023. The University of Zaragoza had no publications from 2010 to 2019, an increase in publications from 2020 (3), and consistent publications with 8 publications each year from 2021 to 2023. Universiti Teknologi Petronas had no publications from 2010 to 2020, an increase in publications from 2021 (2), reaching 10 publications in 2023.

The Figure 12 presents the distribution of articles by country, along with metrics such as Self-Citations Proportion (SCP) and Multiple Country Proportion (MCP). The dataset includes a total of 98 articles from various countries. Spain has the highest number of articles with 36, followed by Italy with 25, and China with 20. The SCP indicates the proportion of self-citations within each country's articles, ranging from 0.0027 to 0.2634. The MCP represents the proportion of articles with multiple country affiliations, varying from 0 to 0.6667. Overall, the table provides insights into the publication and collaboration patterns in CSR research across different countries.

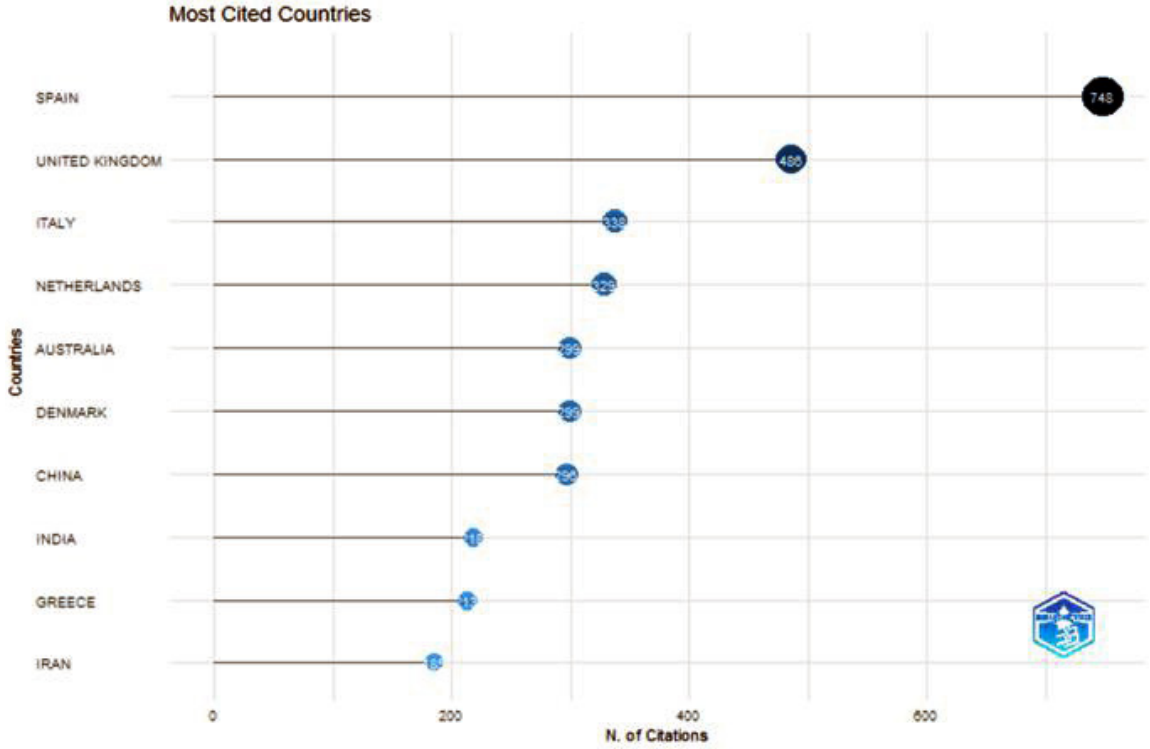


Figure 13: Most Cited Countries

The provided data showcases the research impact and productivity of various countries based on their total citations (TC) and average article citations. Among the countries listed, some notable performers include the Netherlands, Denmark, and Greece. The Netherlands

stands out with a total of 329 citations and an impressive average of 47 citations per article, indicating a high level of recognition and influence in the research community. Denmark also demonstrates strong research performance with 299 citations, but its average of 74.8 citations per article is exceptionally high, suggesting a focused and impactful research output. Greece, with 213 citations, achieves an outstanding average of 53.2 citations per article, showcasing the impact of Greek research contributions. Other countries such as Spain, the United Kingdom, Australia, and Iran also display significant research activity and impact. These findings shed light on the varying levels of research productivity and recognition across different countries.

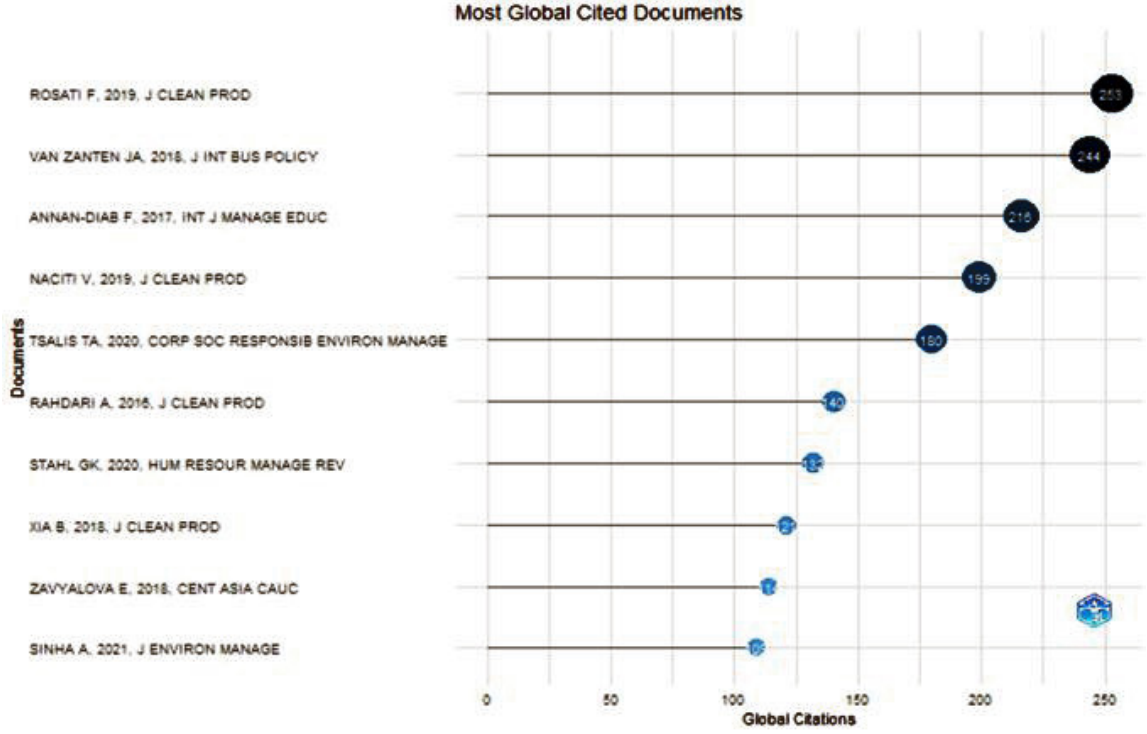


Figure 14: Most Global Cited Documents

The list of papers and their corresponding total citations provides insights into the research impact and recognition in the field of sustainability and related areas. Notable papers with high total citations include "Rosati F, 2019, J Clean Prod" with 253 citations, "VAN Zanten JA, 2018, J Int Bus Policy" with 244 citations, and "Annan-Diab F, 2017, Int J Manage Educ" with 216 citations. These papers have garnered significant attention and acknowledgment within the academic community, indicating their influential contributions to the field. Other papers with notable citations include "Tsalis TA, 2020, Corp Soc Responsib Environ Manage" (180 citations), "Rahdari A, 2016, J Clean Prod" (140 citations), and "Stahl GK, 2020, Hum Resour Manage Rev" (132 citations). The citations reflect the impact and relevance of these papers in shaping the discourse and advancing knowledge in the realm of sustainability and related disciplines.

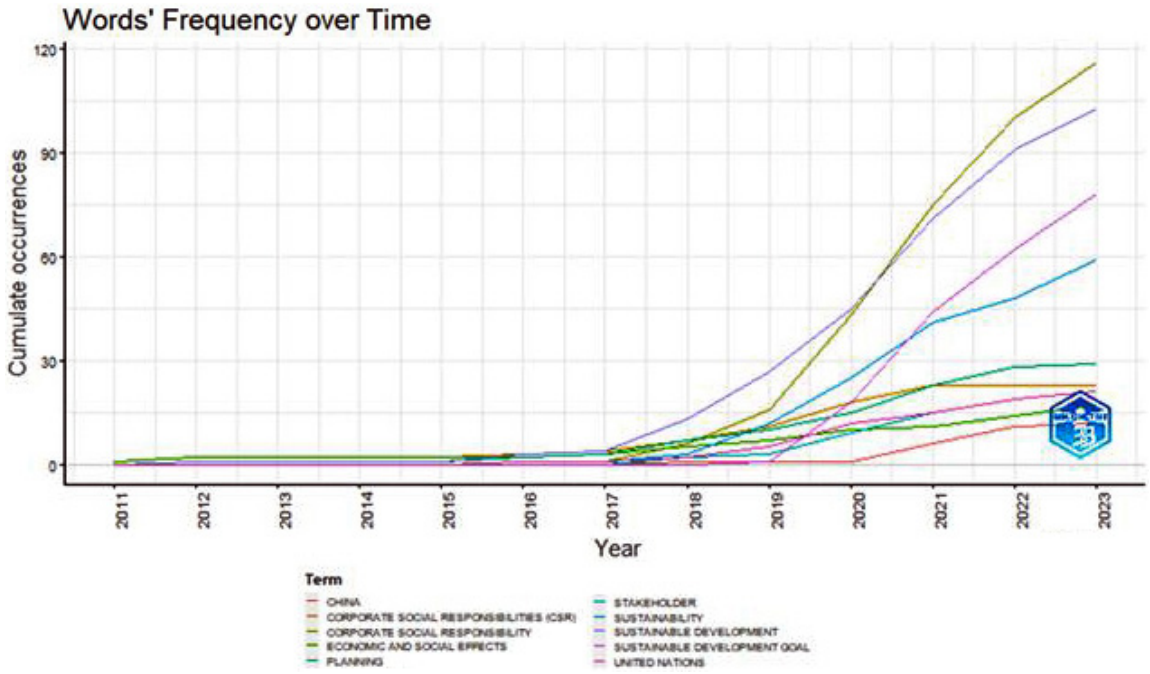


Figure 15: Keywords Frequency Over Time

This dataset provides word frequency details for selected terms related to corporate social responsibility (CSR), sustainable development, sustainability goals, planning, stakeholders, and economic and social effects. The frequency counts are presented for each year from 2011 to 2023. The word frequencies show the increasing prominence of these terms over time. In the earlier years, the frequencies are generally low or non-existent, indicating a lower level of attention and focus on these concepts. However, starting in 2016, there is a noticeable rise in the frequencies, suggesting a growing recognition and discussion of CSR, sustainable development, and related topics. In recent years, particularly from 2019 onwards, the frequencies of these terms have experienced significant spikes, indicating an increased emphasis on and engagement with these issues. Words such as "corporate social responsibility," "sustainable development," and "sustainability" have become more prevalent, reflecting their growing importance in the business and global agenda. Additionally, the mention of "sustainable development goals" aligns with the United Nations' efforts to address global challenges and promote sustainable development worldwide. Furthermore, the inclusion of terms like "planning," "stakeholder," and "economic and social effects" suggests a broader consideration of the impacts and implications of CSR and sustainable development initiatives. Lastly, the presence of "China" as a term in the dataset indicates a specific focus on the country's involvement and efforts in the context of CSR and sustainable development. Overall, the word frequency details highlight the increasing attention and relevance of CSR, sustainable development, and related concepts in the business, social, and environmental domains over the years covered in the dataset.

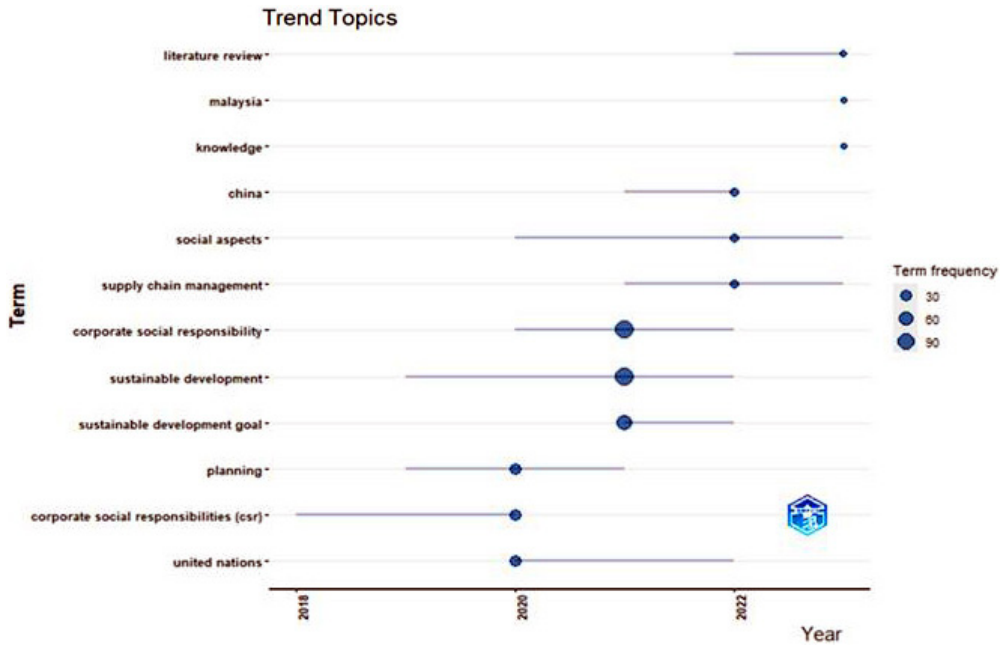


Figure 16: Topics Trends

The dataset provided includes frequency counts and notable years for various terms related to CSR, sustainable development, and related areas. The term "planning" has consistently been relevant with a frequency of 29, being most prominent in 2019, 2020, and 2021. "Corporate social responsibilities (CSR)" has a frequency of 23, showing significance in 2018 and 2020. "United Nations" had a count of 21, with importance in 2020 and 2022. "Corporate social responsibility" had a high-frequency count of 116, particularly in 2020, 2021, and 2022. "Sustainable development" had a count of 103, showing an upward trend and significance in 2019, 2021, and 2022. "Sustainable development goal" had a count of 78, being relevant in 2021 and 2022. "China" had a count of 12, gaining attention in 2021 and 2022. "Social aspects" had a count of 10, showing an increasing trend and importance in 2020, 2022, and 2023. "Supply chain management" had a count of 9, gaining prominence in 2021, 2022, and 2023. "Literature review" had a count of 6, being relevant in 2022 and 2023. Overall, these findings reflect the growing emphasis on incorporating social and environmental considerations into business practices and global development efforts.

The provided parameters and values indicate the settings for analyzing a set of documents related to the field of Corporate Responsibility (CR). The provided parameters and values suggest that an analysis is being conducted on a collection of 250 documents related to Corporate Responsibility (CR). The analysis aims to identify three distinct clusters or topics within the documents using unigrams (single terms) without stemming. The impact or importance of terms is measured locally within individual documents. The walk trap algorithm is employed for clustering, and no explicit repulsion forces or community repulsion are applied during the analysis.

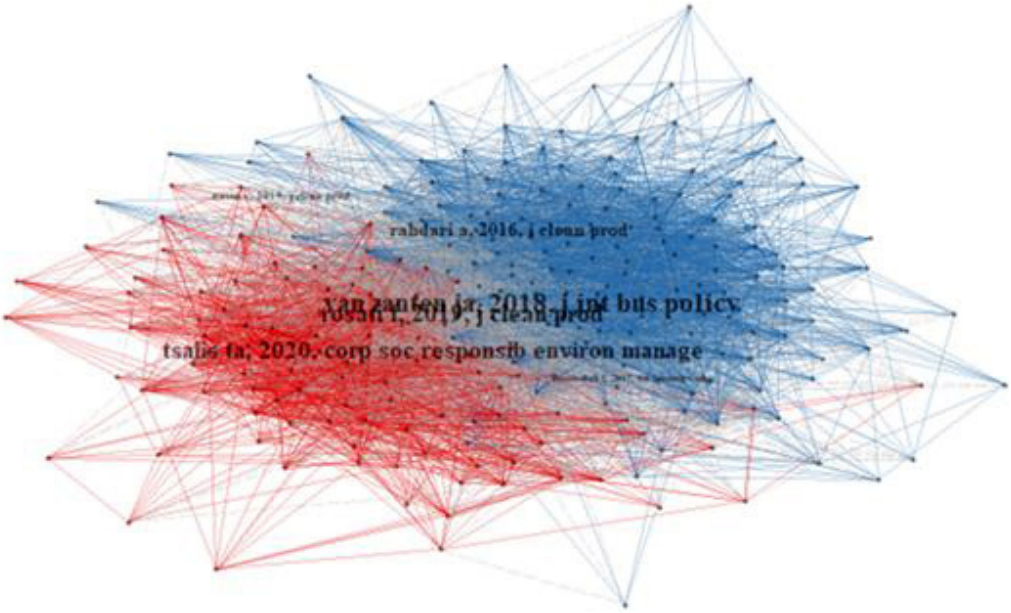


Figure 17: Coupling Network of Documents using CR



Figure 18: Corresponding Words Network

The provided details present a network analysis of nodes (terms or concepts) and their corresponding clusters, along with measures such as Betweenness, Closeness, and PageRank. The provided information highlights the clustering of nodes (terms) and their respective centrality measures within each cluster. This analysis provides insights into the relative importance and connectivity of terms in different clusters, shedding light on the underlying structure and relationships among the concepts within the analyzed network.

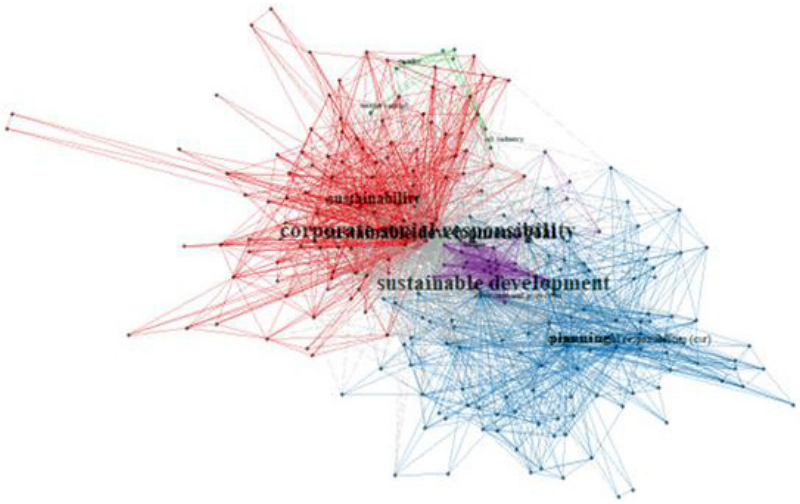


Figure 19: Keyword Clusters

The provided data shows the occurrences of different words and their corresponding clusters and cluster labels. The words are categorized into three clusters: Corporate Social Responsibility (Cluster 1), Sustainable Development (Cluster 2), and Human Capital (Cluster 3). Additionally, there is a fourth cluster labeled "Human" (Cluster 4) that consists of specific terms related to human activities and environmental protection. Notable terms in this cluster include "Human," "Environmental Protection," "Article," "Social Responsibility," and "Economic Development." These findings provide insights into the distribution of words across different clusters and highlight the prevalence of certain topics within each cluster. The clustering helps group similar terms together based on their occurrences, enabling further analysis and understanding of their relationships.

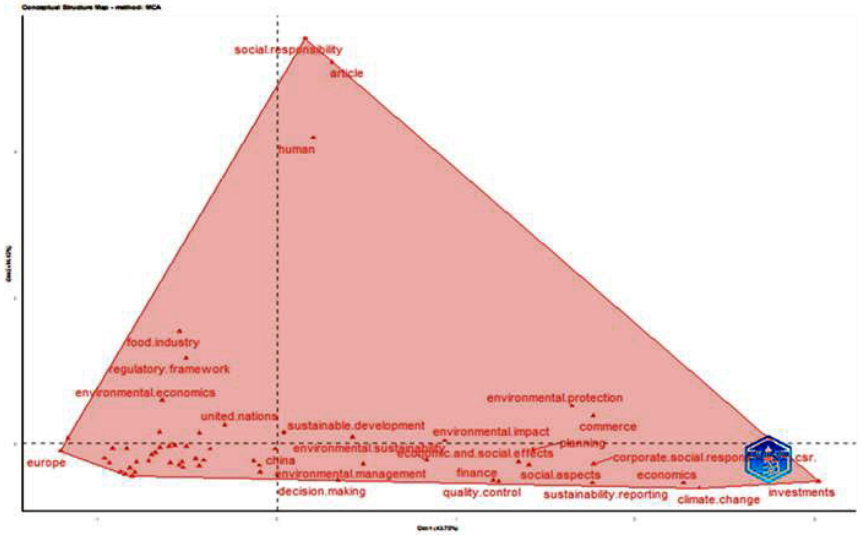


Figure 20: Factor Analysis

The given data represents the word embeddings of various terms in a two-dimensional space. These embeddings are obtained using a clustering algorithm, and the terms are assigned to a single cluster. Each term is represented by two dimensions (Dim.1 and Dim.2) that capture its position in the embedding space. The clustered column indicates that all the terms belong to Cluster 1. Some notable terms and their positions in the embedding space include: "Corporate Social Responsibility" is located in the negative range of Dim.1 and has a relatively low value in Dim.2. "Sustainable Development" has a positive value in both Dim.1 and Dim.2. "Stakeholder" and "United Nations" have negative values in both dimensions. "Human" has a high positive value in Dim.2, indicating its distinct position in the embedding space. Other terms such as "Planning," "Environmental Economics," "Decision Making," "Climate Change," and "Social Responsibility" also have distinct positions in the embedding space. The provided data shows the positions of different terms in a two-dimensional embedding space, and all the terms belong to Cluster 1. The positions of the terms in this space represent their relationships based on their embeddings.

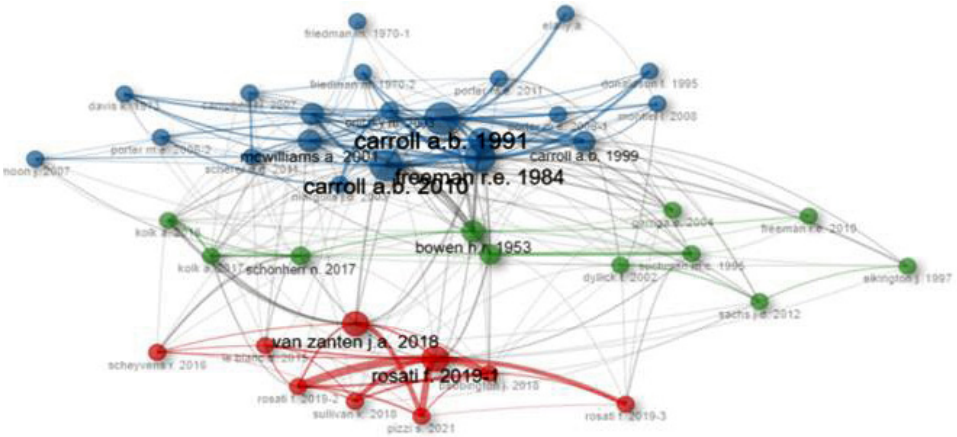


Figure 21: Co-citation Network

In this network analysis, the nodes represent different authors and their contributions to the field of Corporate Social Responsibility (CSR). The clusters indicate the groups to which these authors belong based on their similarities in terms of their betweenness centrality, closeness centrality, and PageRank scores. This cluster comprises authors who have made significant contributions to CSR from a broader societal perspective. Their works have high betweenness centrality, closeness centrality, and PageRank scores, highlighting their impact on CSR discourse. Overall, this network analysis provides insights into the influential authors and their contributions to the field of CSR, helping to identify key figures and their interconnectedness in shaping the development of CSR theory and practice.

CONCLUSION

In conclusion, this study employed bibliometric analysis to examine various aspects of Corporate Social Responsibility (CSR) research. The analysis covered a wide range of

bibliometric indicators, including publication output, citation impact, collaboration patterns, and temporal trends. The findings revealed an overall growth in CSR publications over the years, as evidenced by the increasing publication output. However, it is important to note that the citation impact varied across different years, indicating fluctuations in the influence and visibility of CSR research. Collaboration patterns in CSR research were also explored, highlighting the extent of interdisciplinary and international collaboration. The analysis demonstrated the importance of collaborative efforts in producing impactful CSR research and promoting global participation within the field. The study shed light on key trends and developments in CSR research, providing valuable insights for researchers, policymakers, and practitioners. It identified highly cited papers, and influential authors, and highlighted emerging themes and areas of focus within CSR.

Overall, this study contributes to the understanding of the current landscape of CSR research, providing a foundation for future studies and guiding future research directions. It emphasizes the importance of continued collaboration, knowledge exchange, and rigorous research to address the complex social and environmental challenges faced by businesses and society.

FUTURE RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made for future research. Given the increasing growth rate in research output, it is crucial to continue monitoring and updating the dataset to capture the evolving landscape of the field. Further research can focus on emerging topics and areas within CSR, such as the integration of emerging technologies, new regulatory frameworks, and the role of CSR in addressing pressing global challenges. Future studies can conduct in-depth analyses of specific sub-topics or industries within CSR to provide deeper insights into sector-specific challenges, opportunities, and best practices. Comparative studies across different regions and industries can provide a comparative analysis of CSR practices and their impact, highlighting regional variations and enabling the exchange of best practices. Encouraging interdisciplinary collaborations between scholars from various disciplines can facilitate a more holistic and comprehensive understanding of CSR, integrating perspectives from fields such as economics, sociology, environmental science, and law. By following these future recommendations, researchers can contribute to the advancement of CSR knowledge, promote sustainable business practices, and address emerging challenges in the field.

REFERENCES

[1] Aria, M., Cuccurullo, C., 2017. Bibliometrics: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics* 11, 959–975. https://doi.org/10.1016/j.joi.2017.08.007.

[2] Berle, A.J. Corporate Powers as Powers in Trust. *Harv. Law Rev*. 1931, 44, 1049.

[3] Bowen, H. Social Responsibilities of the Businessman; Harper & Row: New York, NY, USA, 1953.

[4] Carroll, A.B. (1979), ‘‘A three-dimensional conceptual model of corporate performance’’, *Academy of Management Review*, Vol. 4, pp. 497-505.

[5] Carroll, A.B. (1999), ‘‘Corporate social responsibility: evolution of a definitional construct’’, *Business and Society*, Vol. 38, pp. 268-95.

[6] Carroll, A.B. The Pyramid of Social Corporate Responsibility. *Bus. Horiz*. 1991, 34, 39–48.

[7] Davis, K. Can businesses afford to ignore social responsibilities? *Calif. Manag. Rev*. 1960, 2, 70–76.

[8] Dodd, E.M. For Whom are Corporate Managers Trustees? *Harv. Law Rev*. 1932, 45, 1145–1163.

[9] European Commission. A Renewed EU Strategy 2011-14 for Corporate Social Responsibility. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52011DC0681.

[10] Friedman, M. The Social Responsibility of Business is to Increase its Profits. *N.Y. Times Mag*. 1970, 32–33, 122–126.

[11] Orlitzky, M., Schmidt, F.L. and Rynes, S.L. (2003), ‘‘Corporate social and financial performance: a meta-analysis’’, *Organization Studies*, Vol. 24, pp. 403-11.

[12] Porter, M.E. and Kramer, M.R. (2006), ‘‘Strategy and society’’, *Harvard Business Review*, Vol. 84, pp. 78-92.

[13] Sommer, A.A.J. Whom Should the Corporation Serve—The Berle-Dodd Debate Revisited Sixty Years Later. *Del. J. Corp. Law* 1991,16, 33.

[14] Waddock, S. (2008), ‘‘Building a new institutional infrastructure for corporate responsibility’’, *Academy of Management Perspectives*, pp. 87-108.

[15] Wood, D.J. (1991), ‘‘Corporate social performance revisited’’, *Academy of Management Review*, Vol. 16, pp. 691-718.

[16] Wood, D.J. (2010), ‘‘Measuring corporate social performance: A review’’, *International Journal of Management Reviews*, Vol. 12, pp. 51-84.

[17] Wood, D.J. and Lodgson, J.M. (2002), ‘‘Business citizenship: from domestic to global level of analysis’’, *Business Ethics Quarterly*, Vol. 12 No. 2, pp. 155-87.

A Descriptive Study on Machine Learning Driven Decision-Making Strategies: Alternative Data and Human Behaviour

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Abstract

The data which derive outside the traditional market data reserve like GPS, Satellite imagery, social media remarks are considered as Alternative data. The alternative data is useful for anticipating stock market. It identifies various risk exposure and detect upcoming indicators in the market. Alternative data is gaining momentum these days in the discipline of investment, stock market and various algorithm-based trading industry due to availability of machine learning analytical techniques. Alternative data is gaining increased traction in the investment management and algorithmic trading sectors due to the widespread availability of advanced machine-learning analytics tools. An exemplary application of alternative data for predicting stock prices is the utilization of sentiment analytics based on social media. This assertion is supported by literature conducted with professionals working in investment management and algorithmic trading companies that employ alternative data, as well as with firms involved in providing and procuring such data. This study illustrates the development and utilization of sentiment analytics in the investment management industry. Our argument emphasizes that "alternative data" encompasses diverse data sources employed for investment management purposes. To harness the potential of these data sources effectively, different market participants must undertake standardized efforts. We highlight that alternative data often undergo two key processes: prospecting (making the data suitable for analysis using analytics tools) and assetization (converting the data into tradable assets). Furthermore, we showcase how market participants comprehend and utilize alternative data in their practices.

Keywords: *Machine learning, Alternative data, Prediction, Investment Management.*

INTRODUCTION

In recent years, there has been significant academic and practical interest in market data derived from electronic order-books, which contain information about pending orders to buy or sell securities. Research has extensively examined how trading firms invest substantial resources in accessing these data at the fastest available speed, often incurring high fees. Additionally, considerable effort is dedicated to cleansing and cross-referencing the market data obtained

from various vendors. It is noteworthy that the rise of alternative data has provided quantitative, algorithmic hedge funds, and other data- and technology-driven investment firms, with the opportunity to explore a wide range of novel data sources in their pursuit of a competitive edge in the financial markets. Notably, investment strategies based on alternative data tend to have a longer time horizon compared to high-frequency trading. However, events such as the "Hack Crash" in 2013 demonstrate that certain high-speed algorithms can also incorporate alternative inputs in their decision-making processes. During this incident, the Twitter account belonging to the Associated Press was compromised, resulting in the dissemination of a false message stating, "Breaking: Two Explosions in the White House and Barack Obama is injured." As a direct consequence, the Dow Jones Industrial Average witnessed a significant and immediate decline. However, it was soon revealed that the tweet contained false information, leading to a swift recovery of the markets. The incident highlights the capability of fully automated high-speed trading algorithms designed to monitor and react to tweets, despite the subsequent recovery that allowed human intervention. This crash serves as evidence that these algorithms were developed to swiftly process and respond to social media updates, although human involvement was still feasible during the market rebound. While technologically advanced quantitative hedge funds have long been exploring signals from diverse data types, the expansion of financially relevant data sources has predominantly occurred in the last few decades. This has allowed for a broader range of data to be considered significant for financial analysis and decision-making. The growing interest and willingness to invest resources in exploring alternative data can be attributed to two significant factors: the technological feasibility and financial viability of doing so. Advancements in technology have made it possible to access, process, and analyze large volumes of diverse data sets. Additionally, the potential financial benefits and competitive advantages associated with utilizing alternative data have made it financially sensible for market participants to invest time and resources in this area. The expansion of computer power and server capacity, coupled with the reduced costs of hardware, software, and data storage, has empowered investment management organizations to undertake new data-processing initiatives. Moreover, there has been a substantial increase in the volume of available data, prompting a greater number of data scientists to employ advanced machine-learning techniques to extract meaningful insights from this vast and diverse information.

This article investigates the utilization of alternative data by traders and investment managers. Alternative data refers to non-traditional sources of market information that are considered valuable for forecasting stock prices, managing risks, and understanding market movements. The demand for alternative data in investment-related applications is steadily growing. Although there have been notable studies examining the application of alternative data for credit scoring by banks (Aitken, 2017; Bernards, 2019), there is a dearth of scholarly research focused on the use of alternative data in investment management and trading. Specifically, the fields of economic sociology and social studies of finance have received limited attention in this regard.

With the exception of environmental, societal, and governance (ESG) data, which stands out as a widely adopted subset of alternative data in investment management, there is a notable dearth of research in the field. This subset is particularly intriguing, as it is closely linked to the phenomenon of sustainable investing, a topic that has garnered substantial attention from social scientists. Notably, in-depth ethnographic studies, such as those conducted by Dahlman et al. (2021), Eccles et al. (2020), and Leins (2020), have contributed significantly to this area of investigation.

In addition to exploring the nature and utilization of alternative data by market practitioners, it is also essential to consider the implications of the expanding range of potentially relevant data sources for the financial sector. This ongoing expansion carries significant consequences that warrant examination within the field.

LITERATURE REVIEW

This article shifts its focus from the tools and techniques utilized in data analysis to explore alternative data, an extensive and ever-growing collection of diverse nontraditional financial data sources. These sources encompass a broad range, including social media, satellite imagery, GPS data, and sensor data (Denev and Amen, 2020; Ekster and Kolm, 2021). Nevertheless, it is essential to consider the analytics tools alongside alternative data in order to gain a comprehensive understanding of what alternative data is and how it is utilized in financial investment management and securities trading. The specific applications of alternative data are determined by the integration of data and analytics approaches, which also impact the feasibility of extracting valuable insights from various data sources. Consequently, there exists an inherent link between data practices (Alaimo and Kallinikos, 2021) and the practices involved in utilizing models (Svetlova, 2018).

The central argument of this research is that the growing emphasis on alternative data presents both opportunities and challenges for investment management and trading organizations. While alternative data expands the possibilities, it also requires substantial efforts to organize the diverse and unstructured data sources in a way that enables consistent utilization. This organizing process involves standardization (Preda, 2009) or abstraction (Bernards, 2019), which allows various data sources to become valuable within the financial market context. We argue that two practices play a crucial role in the extraction and organization of alternative data. Firstly, prospecting is the process of making data amenable to engagement with data scientific methods (Slota et al., 2020: 1). Assetization, as defined by Birch et al. (2021: 2) (also see Birch, 2017; Birch and Muniesa, 2020; Langley, 2021), is the contingent transformation of a resource (such as data) into capitalized property. Assetization converts data sources that were previously of little interest to investment and trading organizations into valuable tradable assets. In contrast, prospecting expands our understanding of what data is relevant and useful in the finance industry.

Recent academic research has primarily concentrated on the assetization of data, particularly examining how large tech corporations such as Apple, Amazon, Facebook,

Google, and Microsoft, leverage big data. This includes instances where these companies assetize personal data in advertisement-driven surveillance capitalism (Zuboff, 2019) or transform user metrics into valuable assets that attract investor interest (Birch et al., 2021).

Our research demonstrates that the shift towards alternative data and its subsequent prospecting and assetization processes represents the financialization (Krippner, 2005) of non-financial data within the realm of finance. Within the circuit of finance (Aitken, 2017; Bernards, 2019; Tan, 2020), the transition to alternative data signifies its integration into financial markets. It is noteworthy that Zuboff's analysis is notably silent on the role played by financial markets in data capitalism. To grasp the connection between data and capitalism, it is necessary to shift focus to a different set of actors. The key players in the utilization of alternative data are not primarily large tech companies, but rather a diverse range of entities including investment management firms, proprietary trading firms, data analytics firms, and securities exchanges. Although the use of alternative data often relies on technological tools, especially machine learning techniques, the main actors involved differ from those in the realm of large tech companies. While they may occasionally capitalize on data generated by prominent tech platforms, such as tweets, these actors also independently seek out alternative data sources, engaging in activities akin to those of the tech giants.

OBJECTIVES

- To examine the utilization of machine learning techniques in finance, specifically in the context of alternative data sources and their impact on decision-making processes.
- To conduct a descriptive literature review on machine learning-driven finance, focusing on the utilization of alternative data sources and the influence of human behavior on decision-making processes within this context.
- **Research Questions**
  (a) What are the key concepts and theories related to machine learning-driven finance and alternative data utilization?
  (b) How is machine learning applied in finance to leverage alternative data sources?
  (c) What are the commonly used alternative data types in machine learning-driven finance?
  (d) What is the role of human behavior, biases, and emotions in the interpretation and application of alternative data in financial decision-making?
  (e) What are the challenges associated with incorporating human behavior factors into machine learning-driven finance?

RESEARCH METHODOLOGY

Literature Search Strategy

(a) **Database Selection:** Reputable academic databases such as Scopus, Digital Library, ScienceDirect, and Google Scholar has used to search for relevant literature.

(b) **Keywords:** The literature search involve a combination of keywords related to machine learning, finance, alternative data, human behavior, decision-making, and related terms. Example keywords include "machine learning in finance," "alternative data sources," "human behavior in investment management," and "decision-making in financial markets."
(c) **Inclusion and Exclusion Criteria:** The inclusion criteria focus on scholarly articles, conference papers, and books that specifically address the utilization of machine learning-driven finance, alternative data sources, and human behavior in financial decision-making. Non-English language articles and publications beyond a specified timeframe (e.g., last 10 years) may be excluded.

Literature Selection and Data Extraction

(a) **Screening and Selection:** The identified literature screened based on the relevance of titles and abstracts to the research objective and questions. The selected literature will then undergo a full-text review to determine its suitability for inclusion in the study.
(b) **Data Extraction:** Relevant data has extracted from the selected literature, including key concepts, methodologies, findings, and conclusions. The extracted information has organized and synthesized to develop a comprehensive overview of the research topic.

DATA ANALYSIS

(a) **Thematic Analysis:** The extracted data has analyzed thematically to identify recurring themes, patterns, and trends in the literature. Key concepts related to machine learning-driven finance, alternative data, and human behavior will be identified and categorized.
(b) **Comparative Analysis:** The literature will be compared and contrasted to examine similarities and differences in approaches, methodologies, and findings across different studies.

ACHIEVING CONSISTENCY IN NON-STANDARD DATA

Theoretically, we build upon, integrate, and expand existing research on financialization and standardization, which we conceptualize as the dual processes of prospecting and assetization. Throughout history, standards have played a crucial role in the rationalization of modern financial markets. A notable example is the grading system established by the Chicago Board of Trade in the late 19th century. This system transformed various crops into "homogeneous abstractions," differentiating them based on factors such as spring wheat versus winter wheat, No. 1 wheat versus No. 2 wheat, and so on (Cronon, 1991; MacKenzie, 2006 also explores this phenomenon). This standardization revolutionized the commodities market by enabling systematic trading of futures contracts. In a similar vein, the establishment of financial communication infrastructures such as telegraph wires and stock tickers during that era standardized price dissemination (Pinzur, 2021; Preda, 2009). The introduction of the

ticker technology itself played a role in standardizing the communication of price data from the exchanges.

However, in today's financial markets, data standards are developed to accommodate the diverse tactics, technologies, and analytics tools employed by actors in the fields of investment management and trading. Unlike the historical focus on uniformity for trading purposes, current data standards are designed to support the varied approaches utilized by market participants. Standardization in the context of alternative data does not require conformity to a specific technology or system, as seen in traditional standardization practices. Instead, it involves organizing the disparate data sources in a way that aligns with the strategies and technological capacities of those who wish to utilize them for trading or investment purposes. This form of standardization or framing, as described by Preda (2009) as "the process through which technology creates calculable objects," recognizes the qualitative and structural differences present in various data sources. It acknowledges that alternative data sources may vary in their nature and characteristics, and the standardization process accounts for these variations rather than imposing a uniform abstraction. To make sense of the heterogeneous nature of alternative data, the utilization of analytics techniques such as machine-learning algorithms for natural language processing (NLP) becomes essential. These techniques enable the transformation of diverse data sources into calculable forms. Furthermore, analytics tools serve as boundary-setting processes that distinguish between data that can be effectively processed and data that cannot. Preda (2009), drawing inspiration from Michel Callon, refers to this process as "disentanglement." In the context of alternative data, disentanglement relies on the array of analytics methods available for processing big data. By making data sources amenable to processing and matching specific alternative data sources with technologies capable of extracting insights from them, the boundary between relevant and non-relevant data can be defined.

Prospecting in the context of alternative data relies on a diverse range of data science techniques rather than a single technology, unlike the case of the ticker. In practice, this dependence is determined by the investment firm's chosen investing strategy and the technologies it employs. With the appropriate analytics tools in place, prospecting becomes a standardization process that ensures data can be effectively processed while preserving the inherent heterogeneity of the data. Preda (2009) argues that "trusted data" refers to data that is generated or recorded by an authoritative technology. This notion stems from his observations regarding the ticker, where trust in financial data shifted from authoritative humans to the technology responsible for price dissemination. Similarly, in the context of alternative data, the trustworthiness of data is established when it is produced or recorded by reliable and authoritative technologies. Authoritative data in the realm of finance are data that possess analytical value and are instrumental in the trading and investment activities of specific organizations. These data become valuable thanks to the utilization of alternative data and the corresponding analytics tools employed to process it. As such, the concept of data and technological authority is highly dependent on the specific context and local circumstances within the world of finance. The authority of data is determined by its relevance and usefulness

within the particular trading and investment practices of organizations operating in this domain.

DIFFERENT APPROACH TO USE ALTERNATIVE DATA

Through the process of assetization, alternative data can be transformed into usable and potentially reusable resources. The perception of data has shifted from being considered as stable objects to being seen as "reusable goods" (Leonelli, 2019) or "data commodities" (Aaltonen et al., 2021). However, we argue that the term "asset" is more fitting than "commodity" or "good" when describing the economicization and tradability of data. Birch and Muniesa (2020) define an asset as something that can be owned, controlled, traded, and capitalized upon as a source of revenue. Thus, characterizing data as assets emphasizes their ownership, tradability, and potential for generating income. In the case of alternative data, a crucial consideration is that vendors have the ability to provide access to their data, along with the rights to reuse and repurpose it, given that they own or control the data assets. Rather than a one-time product trade, this arrangement is more akin to a subscription model. Unlike physical and tangible assets like land, data assets are typically easier to reuse, repurpose, and repackage. This characteristic renders them less tangible and controllable. Consequently, applying various analytics tools to analyze data assets can lead to the creation of diverse data derivatives, such as visualizations, ratings, and other forms of derived information (Amoore, 2011). At various stages within the data value chain, these assets can be transformed into income-generating sources. There is a growing recognition of data as economic assets, leading to their assetization. The financial market participants increasingly comprehend the economic value of alternative data, which has been facilitated by the continuous expansion of techniques to extract, compile, and leverage such data (Birch et al., 2021; Birch and Muniesa, 2020). Data that undergoes assetization becomes transferable and assumes the status of "capitalized property" (Birch et al., 2021). Alternative data vendors, including financial exchanges and other specialized data providers, engage in the process of assetizing their data resources. We argue that financialization is being driven at the data level through the widespread adoption and assetization of alternative data, as well as the continuous exploration of new data sources. This phenomenon is not limited to economic data alone but extends to various types of data (Krippner, 2005). Previous studies on credit-scoring systems at the individual level have addressed this financialization through the appropriation and exploitation of data (Aitken, 2017; Bernards, 2019). However, it is important to note that the financialization of data raises concerns about data and technology governance rather than focusing solely on the financialization of individuals or daily life at the level of calculative activities within and between firms (Besedovsky, 2018).

SOCIAL MEDIA SENTIMENT ANALYSIS

Social media sentiment analysis refers to the process of analyzing and interpreting the sentiments expressed in social media content. It involves extracting and assessing the

emotional tone, opinions, and attitudes conveyed by users on platforms such as Twitter, Facebook, and Instagram. By employing natural language processing (NLP) and machine learning techniques, social media sentiment analysis aims to gain insights into public opinion, consumer behavior, brand perception, and other relevant aspects of online conversations. This analysis helps organizations and researchers understand the sentiment trends, make data-driven decisions, and tailor their strategies accordingly. During the early 2010s, there was a growing interest in the notion that social media content could be utilized as a means to analyze public opinion and even predict stock prices. The concept that "public mood and sentiment, as measured on Twitter, can have a significant impact on stock market values alongside traditional news" gained traction. Academic researchers such as Johan Bollen and Huina Mao supported this idea, suggesting that social media data, particularly from platforms like Twitter, could serve as a valuable resource for sentiment analysis and enable the forecasting of stock prices (Bollen et al., 2011; Mao et al., 2011). The publication of this study led to a significant amount of subsequent research in the field, with several studies exploring similar prediction capabilities (Broadstock and Zhang, 2019; Siganos et al., 2014). However, other studies adopted a more cautious approach (Kim and Kim, 2014; You et al., 2017) and emphasized the need for improved methodologies, particularly regarding the lexicons employed for sentiment analysis (Oliveira et al., 2016). As a result, the field witnessed a diverse range of perspectives, with some studies confirming the potential of social media sentiment analysis for prediction while others highlighting the importance of refined approaches and considerations.

During the early 2010s, numerous companies emerged that specialized in leveraging the connection between social media sentiment and the capital markets. Among them, an asset management company with a strong focus on social media analytics was founded. This company originated from the convergence of behavioral finance and social media, with its core belief being that social media mood data captures "information that will provoke people to take action," as described by its CEO. The company recognizes the significance of social media sentiment in influencing individuals' behaviors and aims to capitalize on this insight within their asset management strategies. As per the information provided, social media data is of interest due to its potential to generate behavior. The CEO highlighted that high-frequency traders could uncover valuable insights by analyzing order-book data, which can serve as leading or trailing indicators of short-term price fluctuations in markets. For instance, if there is a sudden surge in buy orders for a particular security in the order book, it may indicate an impending price increase. High-frequency traders may interpret this buildup of buy orders as a signal to swiftly purchase the security before others and then sell it at a higher price, profiting from the price difference. This approach allows them to capitalize on timely market movements. (MacKenzie, 2018). While order-book data can serve as predictive indicators for high-frequency traders, they may not be equally effective for other market participants who do not have access to expensive high-speed technologies or real-time exchange data feeds on a sub-second timescale. These market participants may face challenges in reacting swiftly to such data. The CEO further asserted that traditional fundamental indicators, which typically lag behind market movements, may also offer limited utility in terms of predicting future

market trends. This emphasizes the need for alternative approaches and data sources that can provide more timely and actionable insights for market participants who are not equipped with high-speed technologies.

Despite the importance of fundamental analysis, recent events such as the GameStop incident in early 2021 have highlighted the influence of alternative data in empowering retail investors, irrespective of their accuracy in assessing fundamentals. During this event, the online community WallStreetBets aimed to challenge and, to a certain extent, succeeded in putting pressure on short-selling hedge funds. However, the hedge funds swiftly adapted and employed NLP algorithms to analyze online community content, allowing them to anticipate the actions of retail investors and protect themselves against potential losses. This demonstrates the growing recognition of alternative data's significance and the utilization of advanced technologies to decipher the intentions and targets of retail investors (Ade-Ojo, 2021).

CHALLENGES

The financial sector's remarkable growth can be attributed to its remarkable level of innovation. One striking example is the creative and imaginative packaging of subprime mortgages into high-quality asset-backed securities. Today, it is not only investment bank quants responsible for product structuring, but also data scientists utilizing advanced machine learning techniques to analyze a wide range of standard and alternative data. This continuous exploration of data and the application of innovative techniques expand the possibilities within the financial industry. Investment bank quants, hedge fund researchers, and engineers involved in index and exchange-traded products continually refine their skills in layering, integrating, assembling, and repurposing financial products, procedures, and data forms. It is the combined efforts of these individuals, including the data scientists, that drive ongoing financial innovation (Hansen, 2020). The financial industry is experiencing a significant shift towards "datafication" (Mellet and Beauvisage, 2020), wherein there is a heightened focus on data-related aspects such as data storage, data analytics, data management, and more. This shift also involves the extraction of data from diverse sources and its transformation into financial data through repurposing and recontextualization. This close relationship between datafication and financialization suggests that the finance sector has embraced a wide range of data sources, recognizing their potential value for trading, investing, and risk management activities. Apart from the concerns surrounding the growing influence of finance on the economy, the process of financialization through data appropriation also blurs the boundaries between the financial, economic, and social realms. This phenomenon, as explored by Aitken (2017) and Bernards (2019) in their research on the use of alternative data in credit scoring, reveals how the financialization of daily life impacts individuals on a personal level. It demonstrates how the utilization of alternative data in credit scoring contributes to the financialization of various aspects of individuals' daily lives, thereby intertwining financial practices with everyday social and economic activities.

Alternative data, when subjected to advanced machine-learning techniques, expands the horizons of financial research. However, it also presents governance and legal challenges when it comes to effectively managing vast and diverse datasets. This category of data is inherently open-ended, with potentially limitless possibilities. As a result, organizations involved in the financial sector must take the initiative in establishing and promoting data standards and best practices. As mentioned earlier, the increasing utilization of alternative data necessitates careful consideration of various issues such as the source of the dataset, privacy concerns, and the rights to reuse the data, among others. Since alternative data encompasses all information beyond traditional market data, it proves difficult to anchor and appropriately categorize. Therefore, businesses, data providers, and regulators should collaborate to address these challenges and develop frameworks that ensure responsible and ethical use of alternative data. By establishing clear guidelines and best practices, we can harness the power of alternative data while safeguarding individual privacy and adhering to legal requirements. He likened the realm of alternative data to an uncharted territory, dubbing it "the wild west." He emphasized the challenge of establishing equivalence between different alternative data sources, stating, "we lack a clear understanding of how to compare these elements." Unlike traditional data sources extensively utilized in finance, which are firmly rooted within the institutional and physical frameworks that underpin contemporary financial markets, alternative data usage is more susceptible to issues concerning data ownership, origin, and privacy. The absence of a solid foundation makes it harder to navigate and regulate this domain effectively.

The process of transforming alternative data into manageable and potentially valuable datasets involves both prospecting and assetization. Data suppliers engage in prospecting to organize and segment alternative data into subcategories, following the practices adopted by securities exchanges and other vendors specializing in alternative data. This segmentation allows for the assignment of financial significance to each data source. Consequently, prospecting serves as a crucial prerequisite for extracting value, serving as a fundamental step in converting alternative data into assets (Slota et al., 2020). When it comes to sentiment data, users of alternative data express both the value it provides and the limitations surrounding its use. This process can be seen as a form of framing and disentanglement, akin to the anchoring through storytelling described by Dourish and Gómez Cruz, albeit in a less pragmatic manner. As highlighted by some of our sources, categorizing sentiment data as a complementary resource to other, more conventional data sources inherently shapes our perception of the data source itself and determines the scope of its applicability.

LIMITATIONS

The study may face limitations such as publication bias, the availability of relevant literature, and the potential omission of non-peer-reviewed sources. The study's findings will be based on the existing literature and may not capture recent developments or unpublished research.

CONCLUSION

This study aims to provide a comprehensive and descriptive overview of machine learning-driven finance based on alternative data and the role of human behavior in decision-making processes. By analyzing existing literature, the study will contribute to understanding the current state of research in this field and identify avenues for further investigation. For some time, academics have been exploring unconventional sources of data, and financial experts, particularly hedge fund quants, have been observing these developments closely. However, over the past decade, the utilization of alternative data has gained significant traction in investment management. This surge in popularity can be attributed to the increasing availability of extensive datasets, the reduced costs associated with storing them, and advancements in technical tools for data analysis. While the term "alternative data" still carries a certain level of hype and remains an intriguing space for unconventional experiments by quants, it is no longer viewed primarily as a fleeting trend. Its importance and relevance have solidified over time. The industry's ongoing transition towards data-driven approaches, driven by decades of computerization and automation, alongside the more recent widespread adoption of artificial intelligence and machine learning, is now giving way to the integration of alternative data into investment processes across numerous firms (Borch, 2021; Hansen, 2020; Hansen and Borch, 2021). This shift marks a significant evolution, with alternative data assuming an increasingly prominent role in driving decision-making and strategies within the industry. Our study illustrates the process of collecting and repurposing alternative data for investment management, highlighting how practitioners make it understandable and accessible. While our focus is primarily on sentiment data as one specific type of alternative data, we acknowledge that there are other types as well. We emphasize the importance of framing alternative data, including sentiment data, as a complement to traditional data sources or as an additional layer of analysis to enhance traditional methods such as fundamental analysis. By positioning alternative data in this manner, we aim to provide insights into how it can augment existing analytical frameworks and contribute to more informed investment decisions. Furthermore, the increasing utilization of alternative data by trading and investment management firms, driven by their pursuit of a competitive advantage in the markets, has led to the emergence of a distinct industry focused on providing alternative data and analytics. This industry thrives on the investments made by financial firms in alternative data, as well as the broader trend of datafication across various domains. This phenomenon has given rise to the financialization of data, wherein diverse datasets are being transformed into tradable assets or used to gain valuable market insights. The economic prospects associated with these endeavors are further accelerating the process of data financialization.

IMPLICATIONS

The findings of this literature study can inform practitioners, researchers, and policymakers about the potential benefits, challenges, and ethical considerations associated with the application of machine learning-driven finance and alternative data in decision-making processes.

A Systematic Literature Review on Socio Cultural and Economic Factors of Women Entrepreneurs

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Abstract

Research on female entrepreneurs has shown that cultural factors, individual attributes, and socio-economic factors significantly influence their entrepreneurial behaviour. Networking is the most important success factor among female entrepreneurs, followed by business education and training. Cultural beliefs about gender and entrepreneurship also influence self-assessments of entrepreneurial ability.

In the United Arab Emirates, female entrepreneurs face barriers in income generation, independence, and autonomy, with socio-economic variables such as age, educational status, and marital status playing a significant role. In Nigeria, women entrepreneurs started their businesses to contribute to family income and personal interest, with education being a significant factor in their entrepreneurial success. In India, women entrepreneurship ranks 70th among 77 nations on participation in entrepreneurial roles, with highly educated women seeking formal employment rather than self-employment. In Bangladesh, women entrepreneurs face difficulties such as lack of information, statistics, and access to loans.

Research methodology: *We have analysed 54 papers from year 1987 to 2022. This research analyses include year in which paper is published, population summary, socio cultural, economic factors as findings, research methodology. The study findings can give researchers and practitioners insights into the current position of factors of women entrepreneur.*

Findings: *The paper is secondary data based. Overall, research on female entrepreneurs reveals the importance of cultural, individual attributes, and socio-economic factors in shaping their entrepreneurial behaviour.*

Research limitation: *The paper is limited to a literature review that may need further research by using a framework to investigate the factors on entrepreneurial activity.*

Practical implication: *It shows the need for the government to support entrepreneurs through adequate provision of micro finance.*

Originality: *The study is a new way to look at crucial factors affecting entrepreneurial activity in a country.*

Paper type: *This is a research paper.*

Keywords: *Women Entrepreneurs, Socio Cultural, Economic, Determinants, Systematic literature Review.*

INTRODUCTION

Kaur & Bawa (1999): This paper investigates entrepreneurship among women by emphasising the psychological correlates, especially values and locus of control. The study has been conducted on a sample of 100 middle-class women entrepreneurs. The more successful among them were found to score high on ability utilisation, achievement, advancement, economic rewards, personal development and prestige. **(Reavley & Lituchy, 2008)** This qualitative study presents self-reported definitions and determinants of success among female entrepreneurs in six countries. The most important success factor was networking. Business education and training was second. **(Thébaud, 2010**) This study investigates how cultural beliefs about gender and entrepreneurship influence self-assessments of entrepreneurial ability. Results suggest that women are significantly less likely to perceive themselves as able to be an entrepreneur and they hold themselves to a stricter standard of competence when compared to similarly situated men. **(Mathew & Kavitha, 2010)** This paper discusses the socio-cultural barriers that prevent women from contributing to the economic development of Middle East countries. It identifies the policy existing in the Middle East region as a major barrier for women entrepreneurs. **(Neila Holland-Noronha, n.d.)** This paper investigates the experiences of female entrepreneurs in Brazil and the United States. It finds that female entrepreneurs in Brazil and the United States share similarities in motivation for starting the business, but business informality was a phenomenon only found among the Brazilian enterprises. **(HOLMÉN et al., 2011)** This paper analyzes the motivations of eight female Afghan entrepreneurs to start up their own business and the problems they encountered during start-up and operations. The most important push factor was income generation, but pull factors including desire for independence and autonomy were also important. Gender-specific problems included limited market, mobility constraints and negative attitudes and lack of social acceptance for female entrepreneurs. **(C. Mani, n.d.)** This study discusses the socio-economic background of women entrepreneurs in India and the psychological factors that contribute to their entrepreneurship. It finds that the socio-economic profile variables, except caste, type of family and material possession have significant association with entrepreneurship and that the relationship between entrepreneurship and personality variables is significant. **(Seemaprakalpa, n.d.)** This study looks at the socio-economic background of women entrepreneurs and the correlation between socio-economic variables and entrepreneurial behaviour. The study found that there is a significant and positive correlation between socio-economic variables and entrepreneurial behaviour. (**N. Holland, n.d.)** This paper investigates the phenomenon of female entrepreneurship comparing female entrepreneurship in two contexts: Brazil and the United States. It uses interviews with 60 female entrepreneurs to study how they perceive and experience the economic and the social cultural macro environment with their businesses. The findings indicated that the female entrepreneurs from both countries share similarities in motivation for starting the business, but there are also differences in how they define success and network. **(Saeed et al., 2014)** This study explores the social, cultural, and economic implications of female entrepreneurship in Pakistan. It uses

snowball sampling to collect data from 120 female entrepreneurs and finds that the majority started their businesses to contribute to family income and personal interest. There is a significant association between education and participation level in entrepreneurship. **(Peris-Ortiz et al., 2014)** This study uses data from the Global Entrepreneurship Monitor to study women's entrepreneurial potential. It finds that there are no significant gender differences in this potential. **(C. Moses, n.d.)** This paper examines the relationship between the factors that motivate women into entrepreneurship and their choice of business ownership. It uses data from the Nigerian Chamber of Commerce, Industry, Mines and Agriculture, Nigerian Association of Small and Medium Enterprises, and other associations of Nigerian Women in business. The findings showed that there is a significant relationship between entrepreneurial motivation and women's choice of business ownership. **(M. Elizundia, n.d.)** This paper analyzes the personal and social factors that influence the likelihood for women to become entrepreneurs in Mexico. The results show that personal factors (perceived skills and less fear of failure) and social factors (rate of informal investment and entrepreneurs' access to social networks) have a positive effect while other factors do not show to have any influence. **(Rubio-Bañón & Esteban-Lloret, 2016)** This paper analyzes the distance between male and female entrepreneurship from a cultural perspective in 55 countries. Findings show that there is no clear relation between country masculinity and gender entrepreneurship breach. **(S. Matharu et al., n.d.)** The purpose of this empirical study is to find out the motivational factors for women entrepreneurship. The study identified factors like ambition, supportive, professional competence, confidence, affluence, independence, responsive and work environment as the important entrepreneurial motivational factors. **(Nor & Ramli, 2016)** This paper looks at women entrepreneurs in Penang, Malaysia. It finds that many of them are stay-at-home married women with children and that family support has been one of the important factors that encourage these women to venture into businesses. **(Adebayo, P.O., 2016)** This study investigates the impact of culture and individual attributes on women entrepreneurial engagement. It uses a cross sectional survey design of 205 women entrepreneurs in Ilorin metropolis. The findings reveal that cultural orientation and individual attributes such as education, working experience, and risk-taking ability significantly influence women entrepreneurial decision. **(A. Chawla & R. Sujatha, n.d.)** This paper discusses women entrepreneurship in India. It finds that India ranks at dismal 70th position amongst 77 nations on participation of women in entrepreneurial roles and proposes a model for organizations to assess their strength on women entrepreneurship. **(Anambane & Adom, 2018)** This study explores the role of cultural practices on female entrepreneurship with some insights from the Nabdam district of Ghana. The key finding of the study is that, because of cultural influences and norms, entrepreneurship is perceived to be a field for uneducated women as highly educated women seek formal employment than self-employment. Also, the value and respect for traditions was found to be a limiting factor to the growth and expansion of female-owned enterprises. **(Ahmed, 2018**) This paper looks at the socio-economic impact of women entrepreneurship in Bangladesh. It uses exploratory and qualitative research approaches and finds that women entrepreneurs have gained betterment in their values and reputations but

face a number of difficulties such as lack of information and statistics, finding a place to open a shop, and getting loans from banks. **(Arafat et al., 2020)** This research investigates the factors affecting the entrepreneurial propensity of Indian women. It uses the cognitive and social capital perspectives to examine the influence of different factors. The findings show that risk perception, perceived capabilities, social networks, and being an informal investor, all have an impact on women's entrepreneurial propensity. **(Maity & Sahu, 2020)** This study uses a Logistic regression model to investigate the important factors that influence ease of doing business by women entrepreneurs in India. The study finds that most women are engaged in small businesses to help their families financially and that the level of productivity will be enhanced significantly in case of easy access to credit and support received from family members. **(Rosie Lalrampuii, n.d.)** This paper uses qualitative research to study female entrepreneurs in Aizawl. It looks at the reasons they have chosen this field of work, the problems and constraints faced by them, and their stand in the social structure **(Ogundana et al., 2021)** This paper investigates the business-development approaches adopted by Nigerian women entrepreneurs in the garment manufacturing business. It uses in-depth interviews and artifacts to study their business development activities. It also finds that motherhood, meso- and macro-environments affect business development and inhibit women entrepreneurs' access and utilization of money, management, and markets. **(Suchitra & Pai, 2022)** This paper discusses the issues and challenges associated with women entrepreneurs. It reviews the literature on the topic and finds that women entrepreneurs face several socio-economic and other issues.

OBJECTIVE OF THE STUDY

- To review the existing research literature on factors of women entrepreneurship.
- To explore the socio cultural and economic factors that affected the women entrepreneurs.

RESEARCH METHODOLOGY

The research paper is based on secondary data which is taken from various journals, The study is fully based on literature review. From year 1987 to 2022 literature has been covered. Different factors affected by women entrepreneurs are studied.

DISCUSSION AND FINDINGS

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
1	(Erwee, 1987)	1987	Various groups of potential 'home entrepreneurs' over the age of 30.	A review of few studies of female entrepreneurs	Education and training, personality traits, childhood family environment, work history, adult developmental history and adult family history.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
2	(Sethi, 1994)	1994	More than 200 women entrepreneurs from 4 metropolitan cities in India	Empirical	Economic compulsion, education, work experience, and urbanization.
3	(Shabbir & Di Gregorio, 1996)	1996	33 women entrepreneurs in Pakistan	Qualitative	Personal freedom, security, and satisfaction.
4	(E.H. Buttner & D. Moore, n.d.)	1997	Women who left corporate environments to start their own businesses	A research study investigating 4 important issues related to women's entrepreneurial motivation and success measures	The opportunity to work independently, to have greater control over 1's work, and to earn more money.
5	(Kaur & Bawa, 1999)	1999	100 female middle-class women entrepreneurs	Observational	Ability utilisation, achievement, advancement, economic rewards, personal development and prestige.
6	(F. Welter et al., n.d.)	2004	Female entrepreneurs in Ukraine, Republic of Moldova, and Uzbekistan	A comparative study	Limited access to financial resources, lack of business skills and knowledge, and gender stereotypes.
7	(N. Langowitz et al., n.d.)	2005	50 experts from randomly selected adults in 34 countries	Observational	The lack of other job opportunities, confidence, and the ability to perceive business opportunities.
8	(Reavley & Lituchy, 2008)	2008	Female entrepreneurs in Canada, Ireland, Czech Republic, Poland and Japan	Qualitative 6 country analysis	Feeling rejected, networking, business education and training, and country differences.
9	(Rajani & Sarada, 2008)	2008	Female entrepreneurs in Kadapa district	Observational	The role of family, support from relatives, and encouragement from society.
10	(Banad & Talawar, 2009)	2009	Women entrepreneurs from the surrounding area of Bagalkot (Karnataka, India)	A survey of women entrepreneurs	Lack of access to capital, lack of technical skills and lack of support from the government and society.
11	(Thébaud, 2010)	2010	men and women.	observational	cultural beliefs about gender and entrepreneurship, self-assessments of entrepreneurial ability, and resources.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
12	(Owaihan & Rao, 2010)	2010	Kuwaiti women entrepreneurs in Kuwait	An empirical research study	The participation of women entrepreneurs in the small business sectors of many countries is on the rise.
13	(Mathew & Kavitha, 2010)	2010	The population is located in the Middle East.	A case study	Societal orientation of rural parts, socioeconomic development of women, women enterprises and development, restriction on women by the society and culture.
14	(Neila Holland-Noronha, n.d.)	2010	34 female entrepreneurs in Brazil and 26 in the United States	A qualitative exploratory study	Customer satisfaction and recognition from society, business informality, gender barriers, networking, and definitions of success.
15	(Holmén et al., 2011)	2011	8 female entrepreneurs in Afghanistan	Qualitative	Income generation, desire for independence and autonomy, and desire to help non family members.
16	(C. Mani, n.d.)	2011	300 women entrepreneurs in Tirunelveli district, Tamil Nādu state, India	Cross sectional study	The socio economic background of the selected women entrepreneurs, the psychological factors such as personality traits comprising confidence, optimism, independence and the like, and the relationship between entrepreneurship and personality variables.
17	(McGowan et al., 2012)	2012	14 women aged 28 to 49 in Northern Ireland	Exploratory, qualitative research	A desire for independence and financial gain, and the need for flexibility and childcare obligations.
18	(Sadi & Al-Ghazali, 2012)	2012	330 Saudi and 80 Bahraini businesswomen and businessmen in Saudi Arabia and Bahrain	A comparative study	The global outlook for female entrepreneurs, which has been encouraging, and the growth of female entrepreneurship since the 1970s.
19	(Burçin Çetin Karabat, Ö. Sönmez,nd.)	2012	The region is Edirne province.	A survey	Entrepreneurship development for women, concept of entrepreneurship and women's entrepreneurship, causes of

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
					entrepreneurship, and the challenges faced by women entrepreneurs in the process of the financing and entrepreneurship.
20	(Roomi, 2011)	2013	50 female entrepreneurs in Pakistan	Observational, 2 econometric approaches	The personal resources and social capital of women entrepreneurs, the moral support of their immediate family, and their independent mobility and ability to meet with men.
21	(Sharma, 2013)	2013	Self-employed women and other working women in Asian developing countries	A literature review	Economic factors which pushed them to be on their own and urge them to do something independently.
22	(Seemaprakalpa, n.d.)	2013	Middle aged women entrepreneurs in Agra city in U.P.	Observational	Age, educational status and marital status.
23	(Tlaiss, 2014)	2014	20 women entrepreneurs in the United Arab Emirates (UAE)	Qualitative	Family support, access to capital and business networks, self-confidence and persistence.
24	(N. Holland, n.d.)	2014	60 female entrepreneurs in Brazil and in the United States	Qualitative exploratory	Customer satisfaction and recognition from society, networking, and definitions of success.
25	(Saeed et al., 2014)	2014	Female entrepreneurs aged 31-49 years in Punjab, Pakistan	Descriptive	Male member's permission, education level, and personal interest.
26	(Peris-Ortiz et al., 2014)	2014	Entrepreneurs in Spain who had created startups in the year of the survey, both male and female.	Observational	Finds that there are no significant gender differences in this potential.
27	(C. Moses, n.d.)	2014	Nigerian women in business who are entrepreneurs	Correlational	Entrepreneurial motivation and women choice of business ownership.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
28	(M. Elizundia, n.d.)	2014	Women in Mexico	Logistic regression models	Personal factors (perceived skills and less fear of failure) and social factors (rate of informal investment and entrepreneurs access to social networks).
29	(Agarwal & Lenka, 2016)	2016	Women entrepreneurs in India	Qualitative approach based on multiple case studies	Support from family, friends, society, government, non governmental organisations and financial institutions as well as skills and abilities of an entrepreneur.
30	(Rubio-Bañón & Esteban-Lloret, 2016)	2016	Adults (18–64 years) in 55 countries	Observational	Cultural factors play an important role in influencing the gender entrepreneurship gap.
31	(Mazlina Mustapha et al., n.d.)	2016	10 successful female entrepreneurs in Malaysia	Qualitative	Support from family members, internal motivation and creativity.
32	(Sequeira et al., 2016)	2016	350 female entrepreneurs in 6 developing countries: Argentina, Brazil, Hungary, India, Mexico and South Africa	Exploratory analysis	Household income, knowing an entrepreneur, and country of origin.
33	(S. Matharu et al., n.d.)	2016	212 women entrepreneurs in India	Empirical	Ambition, supportive, professional competence, confidence, affluence, independence, responsive and work environment.
34	(Nor & Ramli, 2016)	2016	50 women entrepreneurs in Penang, Malaysia aged between 21-50 years	Descriptive	That many of them are stay at home married women with children, that 84 percent come from families with entrepreneurial experiences, and that family support has been 1 of the important factors that encourage these women to venture into businesses.
35	(Adebayo, P.O., 2016)	2016	205 women entrepreneurs in Kwara state, Nigeria	A cross sectional survey design	Cultural orientation, education, working experience, and risk taking ability.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
36	(A. Chawla & R. Sujatha, n.d.)	2016	India	An exploratory study	Organizational adaptability within the myths and realities of culture and norms; shift in culture and norms redefining stereotyping.
37	(G. Moustafa & Ajoqué Santos, n.d.)	2016	Egypt and Brazil	A case study	Lack of access to capital, limited access to education and training, and cultural and social norms.98
38	(Anggadwita et al., 2017)	2017	210 women entrepreneurs in micro, small and medium enterprises in Bandung, Indonesia	Quantitative with a causal descriptive approach	The development of women entrepreneurship in emerging economies, which may continuously face challenges, particularly in countries with multicultural attributes.
39	(Agarwal et al., 2018)	2018	Female entrepreneurs of different regions in Uttar Pradesh, the biggest state of India	A structured questionnaire	The push and pull factors of motivation.
40	(Anambane & Adom, 2018)	2018	20 female entrepreneurs in the Nabdam district of Ghana	Qualitative	Cultural influences and norms, entrepreneurship is perceived to be a field for uneducated women as highly educated women seek formal employment than self employment, and the value and respect for traditions.
41	(Cavada et al., 2018)	2018	13 female entrepreneurs and experts in Mexico	Qualitative	Institutional collectivism, gender egalitarianism, and the power distance.
42	(Parsad et al., 2018)	2018	India	A conceptual study	The practice wherever females systematise various elements of production, willing to take risks and be responsible for employing other people.
43	(Ahmed, 2018)	2018	All of the female entrepreneurs of the handloom industry in Sylhet City Corporation, Bangladesh	Exploratory and qualitative research approaches	Values and reputation, difficulties with market authorities and banks, and support from family.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
44	(Gouher Ahmed et al., n.d.)	2019	178 female entrepreneurs in United Arab Emirates	A case study	Self-determination, desire for change, crave for family life balance, occupational f lexibility, work responsibility, career advancement, and independence.
45	(Nizamova & Smagulova, 2019)	2019	Women in Kazakhstan who are involved in entrepreneurial activities	Combination of analysis of scientific literature, survey of women involved in entrepreneurial activities, and analysis of statistical reporting	The female factor, new thinking, philosophy and lifestyle, values and morality.
46	(. & ., 2019)	2019	Female entrepreneurs	Empirical	Gender equality issues and development.
47	(Arafat et al., 2020)	2020	1305 Indian women	Observational	Opportunity perception, risk perception, perceived capabilities, social networks, and being an informal investor.
48	(Maity & Sahu, 2020)	2020	Female women entrepreneurs from 4 different backward regions in West Bengal, India	Logistic regression model	Financing, non cooperation from family, and level of productivity.
49	(Mayorga-Meléndez et al., 2020)	2020	Female entrepreneurs from south america	A review of specialized literature	Creating an enterprise is a professionally socially accepted option for women, promoting self-employment or the creation of businesses among women and both men and women have equal access opportunities to create a company.
50	(Rosie Lalrampuii, n.d.)	2020	Female entrepreneurs among the middle income groups in Aizawl	Qualitative research approach	Traditional, sociocultural and economic context.

Sr. No.	*Citation*	*Year*	*Population Summary*	*Research Methodology*	*Socio Cultural Factors Studied*
51	(Ogundana et al., 2021)	2021	31 women entrepreneurs in the garment industry in Lagos, Nigeria	Qualitative	Money (access and utilization), market (customer intelligence), and management (nonformal education and experience) as crucial enterprise development components in women entrepreneurship. Motherhood (household responsibilities), meso and macro environments (socioeconomic and cultural factors) not only affected business development but also inhibited women entrepreneurs' access and utilization of money, management, and markets and shaped their business development actions.
52	(Modarresi & Arasti, 2021)	2021	30 female women entrepreneurs and women with entrepreneurial roles in Iran	Qualitative	The society's perception of entrepreneurship among women, women's social security, and common family norms governing a society.
53	(R.F.A. Shamsheri et al., n.d.)	2021	374 women entrepreneurs in Pakistan's 2 culturally diversified regions, Gilgit Baltistan and Islamabad	Observational	The influences of regional cultures within the context of Masculinity and Individualism on the business performance of women entrepreneurs.
54	(Suchitra & Pai, 2022)	2022	Not applicable	Literature research	Work life balance, digitalization, and education.

RESEARCH LIMITATION

The paper is limited to a literature review that may need further research by using a framework to investigate the factors on entrepreneurial activity

CONCLUSION

It is clear from the literature covered from year 1987 to 2022. From 1987 to 2000, women entrepreneurship was influenced by education, training, work experience, economic compulsion, personal freedom, security, autonomy, and achievement.

From 2000 to 2015, sociocultural and economic factors affecting women's entrepreneurship include limited access to financial resources, lack of business skills, gender stereotypes, and societal orientation. Factors such as family support, networking, business education, and country differences also contribute to women's entrepreneurial success. Cultural beliefs about gender and entrepreneurship, self-assessment of entrepreneurial ability, and participation in small business sectors are also important. Global outlook and growth of female entrepreneurship since the 1970s further support this growth.

From 2016 to 2022, sociocultural and economic factors of women entrepreneurship include support from family, friends, society, government, non-governmental organizations, and financial institutions. These factors include ambition, professional competence, confidence, affluence, independence, responsiveness, and work environment. Many women come from stay-at-home families with entrepreneurial experiences, and family support is crucial. Cultural influences and norms, institutional collectivism, gender egalitarianism, and power distance also influence women's entrepreneurship.

Overall, research on female entrepreneurs reveals the importance of cultural, individual attributes, and socio-economic factors in shaping their entrepreneurial behaviour. It shows the need for the government to support entrepreneurs through adequate provision of micro finance. The study is a new way to look at crucial factors affecting entrepreneurial activity in a country.

REFERENCES

[1] . K., & . C. (2019). A Study on Women Entrepreneurship: Opportunities and Challenges. *Asian Journal of Managerial Science*, 8(3), 34–38. https://doi.org/10.51983/ajms-2019.8.3.2707

[2] A Glimpse at Women Entrepreneurs in Penang (2016). *Akademika*, 86(02). https://doi.org/10.17576/akad-2016-8602-06

[3] A Chawla, & R. Sujatha (n.d.). Women Entrepreneurship: Culture and Norms – An Indian Perspective.

[4] Agarwal, S., & Lenka, U. (2016). An exploratory study on the development of women entrepreneurs: Indian cases. *Journal of Research in Marketing and Entrepreneurship*, 18(2), 232–247. https://doi.org/10.1108/jrme-04-2015-0024

[5] Agarwal, S., Agrawal, V., & Agrawal, A.M. (2018). Motivational and success factors: through the lens of women entrepreneurship. *International Journal of Management and Enterprise Development*, 17(4), 307. https://doi.org/10.1504/ijmed.2018.096231

[6] Ahmed, N. (2018). Socio-economic Impact of Women Entrepreneurship in Bangladesh. *Sociology and Anthropology*, 6(6), 526–533. https://doi.org/10.13189/sa.2018.060602

[7] Alicia María Rubio-Bañón, & Nuria N. Esteban-Lloret (n.d.). Cultural factors and gender role in female entrepreneurship.

[8] Anambane, G., & Adom, K. (2018). Assessing the Role of Culture in Female Entrepreneurship in Contemporary Sub-Saharan Society: Insights from the Nabadam District of Ghana. *Journal of Developmental Entrepreneurship*, 23(03), 1850017. https://doi.org/10.1142/s1084946718500176

[9] Anggadwita, G., Luturlean, B. S., Ramadani, V., & Ratten, V. (2017). Socio-cultural environments and emerging economy entrepreneurship. *Journal of Entrepreneurship in Emerging Economies*, 9(1), 85–96. https://doi.org/10.1108/jeee-03-2016-0011

[10] Arafat, M.Y., Ali, J., Dwivedi, A.K., & Saleem, I. (2020). Social and Cognitive Aspects of Women Entrepreneurs: Evidence from India. *Vikalpa*, 45(4), 223–239. https://doi.org/10.1177/02560909211015457

[11] Banad, M.M., & Talawar, M.N. (2009). Status of Indian women entrepreneurship in context to liberalization, privatization and globalization. *2009 16th International Conference on Industrial Engineering and Engineering Management*. https://doi.org/10.1109/icieem.2009.5344522

[12] Burçin Çetin Karabat, & Ö. Sönmez (n.d.). The Role of Women Entrepreneurship for the Regional Development / Bölgesel Kalk\inmada Kad\in Giri\c simcili\u ginin Rolü.

[13] C. Mani (n.d.). Forces behind Entrepreneurship of Women – An Economic Study.

[14] C. Moses (n.d.). Women Entrepreneurship: A Study of theRelationship between Motivation and Type ofBusiriess Ownership.

[15] Cavada, M.C., Bobek, V., Skoko, H., & Maček, A. (2018). Cultural Foundations of Female Entrepreneurship in Mexico: Challenges and Opportunities. *Naše Gospodarstvo/Our Economy*, 64(1), 28–40. https://doi.org/10.2478/ngoe-2018-0004

[16] E.H. Buttner, & D. Moore (n.d.). Women's Organizational Exodus to Entrepreneurship: Self-Reported Motivations and Correlates with Success.

[17] Erwee, R. (1987). Entrepreneurship as a career option for woman: An overview of research. In *S.-Afr. Tydskr.Bedryfsl*, Vol. 18, Issue 3.

[18] F. Welter, D. Smallbone, N. Isakova, Elena Aculai, & Natalja Schakirova. (n.d.). Women's Entrepreneurship in Ukraine, Republic of Moldova and Uzbekistan: Results of a Comparative Study.

[19] G. Moustafa, & Ajoqué Santos (n.d.). Female entrepreneurship in developing countries, Barriers and Motivation: Case Study, Egypt and Brazil.

[20] Gouher Ahmed, C. Amponsah, & Shohab Sikandar Deasi (n.d.). Exploring the Dynamics of Women Entrepreneurship :A Case Study of UAE.

[21] Holmén, M., Min, T.T.A.R., & Saarelainen, E. (2011). Female Entrepreneurship in Afghanistan. *Journal of Developmental Entrepreneurship*, 16(03), 307–331. https://doi.org/10.1142/s1084946711001860

[22] Impact of Socio-Cultural Values and Individual Attributes on Women Entrepreneurship (n.d.).

[23] Kaur, R., & Bawa, S. (1999). Psychological Correlates of Entrepreneurial Performance among Women. *The Journal of Entrepreneurship*, 8(2), 195–205. https://doi.org/10.1177/097135579900800204

[24] M. Elizundia (n.d.). Personal and social factors that influence female entrepreneurship in Mexico.

[25] Maity, S., & Sahu, T.N. (2020). Women Entrepreneurs and Determinants of Their Success: An Empirical Study. *SEDME (Small Enterprises Development, Management & Extension Journal): A Worldwide Window on MSME Studies*, 47(2), 115–129. https://doi.org/10.1177/09708464211032546

[26] Mathew, V., & Kavitha, M. (2010). Women entrepreneurs practicing business in Middle East: case study of socio-cultural environmental barriers. *International Journal of Arab Culture, Management and Sustainable Development*, 1(3), 239. https://doi.org/10.1504/ijacmsd.2010.032639

[27] Mayorga-Meléndez, J., Carvajal-Larenas, R., & Morales-Urrutia, D. (2020). Aspectos sociales y su influencia en el emprendimiento femenino Sudamericano. *Administración*, 2(5), 125–133. https://doi.org/10.33386/593dp.2020.2.196

[28] Mazlina Mustapha, A. Punitha, & P. Subramaniam (n.d.). Challenges and success factors of female entrepreneurs: Evidence from a developing country.

[29] McGowan, P., Redeker, C.L., Cooper, S.Y., & Greenan, K. (2012). Female entrepreneurship and the management of business and domestic roles: Motivations, expectations and realities. *Entrepreneurship and Regional Development*, 24(1–2), 53–72. https://doi.org/10.1080/08985626.2012.637351

[30] Modarresi, M., & Arasti, Z. (2021). Cultural Challenges of Women Entrepreneurs in Iran. In *The Emerald Handbook of Women and Entrepreneurship in Developing Economies* (pp. 229–245). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80071-326-020211013

[31] N. Holland (n.d.). Cultural and Socio Economic Experiences of Female Entrepreneurs in Brazil and the United States: An Exploratorial and Empirical Analysis.

[32] N. Langowitz, M. Minniti, & P. Arenius (n.d.). Global Entrepreneurship Monitor: 2004 Report on Women and Entrepreneurship.

[33] Neila Holland-Noronha (n.d.). Economic and socio cultural experiences of female entrepreneurs in Brazil and the United States: A exploratorial and empirical analysis.

[34] Nizamova, G., & Smagulova, N. (2019). Motivations Analysis of Women Entrepreneurs in Kazakhstan. *Bulletin of Science and Practice*, 5(4), 293–300. https://doi.org/10.33619/2414-2948/41/40

[35] Ogundana, O.M., Simba, A., Dana, L.-P., & Liguori, E. (2021). Women entrepreneurship in developing economies: A gender-based growth model. *Journal of Small Business Management*, 59 (sup1), S42–S72. https://doi.org/10.1080/00472778.2021.1938098

[36] Owaihan, A. Al, & Rao, C.P. (2010). Women entrepreneurs and their firms: attributes and problems. *J. for International Business and Entrepreneurship Development*, 5(1), 48. https://doi.org/10.1504/jibed.2010.035199

[37] Parsad, C., Vijay, T.S., & Prashar, S. (2018). Women entrepreneurship in India: a review of barriers and motivational factors. *International Journal of Entrepreneurship and Innovation Management*, 22(3), 206. https://doi.org/10.1504/ijeim.2018.10012587

[38] Peris-Ortiz, M., Devece, C., Rueda-Armengot, C., & Estruch, V.F. (2014). Women and Entrepreneurship: A Gender Comparison in Spain. *Business and Management Research*, 3(4). https://doi.org/10.5430/bmr.v3n4p82

[39] R.F.A. Shamsheri, Sana Mukarram, S. Naveed, & Aleena Mukarram (n.d.). Impact of regional culture on business performance of women entrepreneurs with reference to small.

[40] Rajani, N., & Sarada, D. (2008). Women Entrepreneurship and Support Systems. *Studies on Home and Community Science*, 2(2), 107–112. https://doi.org/10.1080/09737189.2008.11885260

[41] Reavley, M. A., & Lituchy, T. R. (2008). Successful women entrepreneurs: A six-country analysis of self-reported determinants of success more than just dollars and cents. *International Journal of Entrepreneurship and Small Business*, 5(3/4), 272. https://doi.org/10.1504/ijesb.2008.017304

[42] Roomi, M. A. (2011). Entrepreneurial capital, social values and Islamic traditions: Exploring the growth of women-owned enterprises in Pakistan. International Small Business Journal: Researching Entrepreneurship, 31(2), 175–191. https://doi.org/10.1177/0266242610397403

[43] Rosie Lalrampuii (n.d.). The Study of Women Entrepreneurship among theMiddle Income Groups in Aizawl.

[44] S. Matharu, Ravi Changle, & A. Chowdhury (n.d.). A Study of Motivational Factors of Women Entrepreneurs.

[45] Sadi, M.A., & Al-Ghazali, B.M. (2012). The Dynamics of Entrepreneurial Motivation Among Women: A Comparative Study of Businesswomen in Saudi Arabia and Bahrain. In *The GCC Economies* (pp. 217–227). Springer New York. https://doi.org/10.1007/978-1-4614-1611-1_18

[46] Saeed, S., Malik, N., Sohail, M.M., Tabassum, A., & Anwar, H.N. (2014). Factors Motivating Female Entrepreneurs: A Study Conducted in Major Urban Area of Punjab. *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2014.v5n4p669

[47] Seemaprakalpa. (n.d.). Socio-economic Variables and their Correlation with Entrepreneurial Behaviour of Women Entrepreneurs.

[48] Sequeira, J.M., Gibbs, S.R., & Juma, N.A. (2016). Factors Contributing to Women's Venture Success in Developing Countries: An Exploratory Analysis. *Journal of Developmental Entrepreneurship*, 21(01), 1650001. https://doi.org/10.1142/s1084946716500011

[49] Sethi, J. (1994). Women Entrepreneurship in India: A Brief Comment. *SEDME (Small Enterprises Development, Management & Extension Journal): A Worldwide Window on MSME Studies*, 21(4), 69–73. https://doi.org/10.1177/0970846419940408

[50] Shabbir, A., & Di Gregorio, S. (1996). An examination of the relationship between women's personal goals and structural factors influencing their decision to start a business: The case of Pakistan. *Journal of Business Venturing*, 11(6), 507–529. https://doi.org/10.1016/s0883-9026(96)00034-1

[51] Sharma, Y. (2013). Women Entrepreneur In India. *IOSR Journal of Business and Management*, 15(3), 9–14. https://doi.org/10.9790/487x-1530914

[52] Suchitra, & Pai, R. (2022). A Systematic Review of Issues and Challenges Associated with Women Entrepreneurs. *International Journal of Management, Technology, and Social Sciences*, 548–571. https://doi.org/10.47992/ijmts.2581.6012.0237

[53] Thébaud, S. (2010). Gender and Entrepreneurship as a Career Choice. *Social Psychology Quarterly*, 73(3), 288–304. https://doi.org/10.1177/0190272510377882

[54] Tlaiss, H.A. (2014). Women\textquoterights Entrepreneurship, Barriers and Culture: Insights from the United Arab Emirates. *The Journal of Entrepreneurship*, 23(2), 289–320. https://doi.org/10.1177/0971355714535307

Role of Startup20 in Accelerating Startups in India

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Abstract

Unprecedented levels of innovation and disruption are occurring right now, fueled by the influx of startup companies that are prepared to take on the world with ground-breaking products, business models, and investment. By the turn of the century, India had established itself as the world's "software center." It led to a technological revolution that encouraged countless Indian start-ups to create cutting-edge technology. In a few of situations, these startups grew swiftly and became unicorns. India is currently third in the world just behind the United States and China in terms of unicorn populations.

Under India's G20 presidency, Startup20 was founded as an official engagement group. Startups act as an engine for economic recovery, for innovations, reorientation and for nations growth in the world. Startup20 is an official engagement group which is going to lead by the Indian presidency for the first time of the G20 2023. To put together several stakeholders at one floor the engagement group would become the global start up voice.

The startups need to have an encouraging and booming environment to rise quickly and for that policies and regulations globally require to keep stride with the innovations. The start up 20 engagement group globally assisting startups and allowing synergies connecting startups, corporates, investors, innovation agencies and other key ecosystem stakeholders. The purpose of this research article is to shed down the need of startups in India and to highlight the opportunities and challenges came along with the startups and the initiatives taken by the start up 20 to accelerate the growth of startups in India.

Keywords: *Startup20, G20, Startup Ecosystem, Global Startup, G20 Engagement Group, Government Initiative, Startup Unicorn.*

INTRODUCTION

As stated by prime minister Narendra Modi, one of the most important features of India's entry into the Amrit Kaal is its G20 chairmanship. For all Indians, this is a great source of pride. India's G20 presidency presents a unique opportunity for all countries to work toward the ultimate objective of integrated global progress because of India's growing technological prowess, which is accelerated by rapid progress in start-up and entrepreneurship culture.

On January 16, 2016, the Indian Prime Minister announced the Start-up India Initiative. Giving people's entrepreneurial spirits a boost can make them more prosperous and employable. The Department of Industrial Policy and Promotion is maintaining this work and views it as a long-term project.

Since the start-up India program was introduced on January 16, 2016, more than 69,000 start-ups in the country have been recognized till May 2, 2022. We have identified 56 different start-ups tackling challenges, with 13% coming from the IT services industry, 9% from the healthcare and life sciences industry, 5% from professional and commercial services, 5% from agriculture, and 5% from the food and beverage industry. Innovation in India is not just limited to specific industries.

"One Earth, one Family, one Future," with this theme India will hold the G20 presidency for the 18th time in 2023. This presidency will be focused on finding workable solutions to global issues, with "the S factor" or Indian startups leading the charge. With over 84,000 registered firms working in industries like health care, education, gaming, finance agriculture, among others, India is the third largest start up community in the world as of now. Over 100 unicorns exist in India, and 15% of them include female founders as their leaders. India with Startup20, an engagement group has the capability to transform the G20 and to promote global progress via innovation, collaboration, entrepreneurship and inclusivity as it takes over the G20.

Start ups have grown to be crucial for gauging and promoting a society's innovation strength. The act of stating a business is no longer frowned upon but rather seen as a test of ability and bravery. To meet market and societal needs, the start up culture has offered an agile solution.

The 'S factor' of the Indian economy will be the ideal component as India leads the G20 presidency in 2023, as envisioned by PM Narendra Modi, who says that "India looks forward to a presidency of healing, harmony, and hope." The G20 India presidency started startup20 to balance this mixture. The Startup20 initiative, the youngest of the G20's 11 formal interaction groups, intends to develop a worldwide narrative for fostering startups and fostering collaborations, investors, innovation agencies, ecosystem facilitators, and entrepreneurs. The group's objective is to give startups from G20 member nations a common forum for collaboration and the development of actionable advice for developing enabler capacities, identifying funding gaps, improving employment opportunities, achieving SDG targets and climate resilience and expanding an inclusive ecosystem. Meetings that are pertinent to the g20 debates are hosted by engagement groups, which are non- governmental organizations made up of worldwide stakeholders.

What is a Startup?

An entrepreneurial effort known as a startup firm tries to fill a market gap with an innovative product, service, method, or platform by creating a workable business model. Startup companies are often newly established, rapidly expanding businesses. The idea has been

presented in India by the government on January 16th, 2016. Intended to create a solid environment for fostering startups and innovation in the nation, which will promote long term economic growth and provide a significant number of job possibilities.

Definition of a startup by DIPP (Department of industrial policy and promotion)

According to DIPP, a startup is defined as a legal person who has been formed or registered in India and who meets the following requirements:

1. The time period from the date of incorporation cannot be longer than seven years, while in case of the bio technology industry, it may be up to 10 years.
2. It may be registered as a limited liability partnership, a partnership firm, or a private limited company.
3. For any fiscal year following incorporation or registration, the annual turnover cannot exceed INR25cr.
4. It should strive to innovate, create, or improve goods, processes or services alternatively, it should be a scalable business model with a high potential for income or employment creation.

To alter the definition of startups, the Department of industrial policy & promotions (DIPP) requested proposals from a variety of Indian businesses in 2017.

The following changes have been made to the definition of startup and its policy (23 may 2017):

(a) In order to profit from the startup India programs, the government had said it would consider the startup's capacity for creating jobs and their financial standing.
(b) SME tax rates are decreased to 25% for businesses with yearly revenues up to $7.6 million. In addition, the government has permitted carrying over and setting up the loss of startup for seven years, effective as of April 2018.
(c) Startups are not required to seek a letter of reference from an industry body in order to receive tax benefits.
(d) Companies formed after march 2016 are now eligible for a tax holiday lasting 3 years out of the first seven of their existence, before this the limit was 3years out of 5 years.
(e) 80% of the rebate will be given to the startups by the government while filing of patents compared to other companies. This benefit will be availed by the company during his initial year of formation.

To encourage the start up ecosystem and create a country of job creators rather than job seekers, these measures are being made.

Startup Definition Expanded (19 February 2019)

To be regarded as a startup, an entity must

1. If it is incorporated as a private limited company, registered as a partnership firm, or registered as a limited liability partnership in India, up to 10 years from the date of registration.
2. The turnover for a fiscal year cannot exceed Rs 100 crore.

3. Pursuing innovation, the invention or improvement of goods, methods or services or a scalable company model with a high rate of income or employment creation.

However, a company created by the division or reconstruction of an existing company is not regarded as a "startup".

Indian Startup Ecosystem

Unicorn startups are a rare species that occasionally appear in the vibrant startup environment. These outstanding endeavors have captured the attention of the business community and our imaginations with their exceptional accomplishments. India has seen the development of multiple unicorn firms that are revolutionizing sectors, altering markets, and leaving their imprint on the global stage thanks to its thriving startup ecosystem and dynamic entrepreneurial culture.

In May 2022, the Indian Startup Ecosystem had surpassed the landmark of 100 unicorns, with a combined valuation of $332.7 billion, placing it third in the world in terms of the number of unicorns. Indian unicorns are flourishing in the modern, fast-paced, and dynamic economy. These startups are not only developing ground-breaking products and technology, but also significantly increasing employment.

There are no new unicorns produced in India as of the first quarter of 2023. No unicorns were produced between January and March 2023, as opposed to 14 over the same time period in 2022, according to the research by the market intelligence platform Tracxn. According to the research, the decline in investment was caused by a 79 percent drop in late-stage capital ($1.8 billion) from Q1 2022 to Q1 2023.

In the startup ecosystem, the idea of unicorn startups has become more well-known as a gauge of success and promise. In India, unicorns are seen as industry game-changers with the ability to transform markets or establish new ones. BYJU's, Swiggy, Dream11, Razor pay, and Ola Cabs are a few examples of well-known unicorn startups.

List of Startup Companies with Unicorn Status in India

Sr. No.	*Company*	*Sector*	*Entry Valuation ($B)*	*Entry*
1.	Molbio Diagnostics	Healthtech	1.53	Sep-2022
2.	Shiprocket	Aggregator	1.23	Aug-2022
3.	Onecard	Fintech	1.3	Jul-2022
4.	Leadsquared	SaaS	1	Jun-2022
5.	Purple	E-Commerce	1.1	Jun-2022
6.	PhysicsWallah	Edtech	1.1	Jun-2022
7.	Open Financial Technologies	Fintech	1	may-2022
8.	Games24*7	Gaming	2.5	Mar-2022
9.	Oxyzo Financial Services	Fintech	1	Mar-2022
10.	Amagi Media Labs	SaaS	1	Mar-2022
11.	CredAvenue	Marketplace	1.3	Mar-2022

Sr. No.	*Company*	*Sector*	*Entry Valuation ($B)*	*Entry*
12.	Hasura	SaaS	1	Feb-2022
13.	Uniphore Software systems	SaaS	2.5	Feb-2022
14.	XpressBees Logistics	Logistics Services	1.2	Feb-2022
15.	LivSpace	Interior Design	1.2	Feb-2022
16.	ElasticRun	Logistics Services	1.4	Feb-2022
17.	Polygon	Web3 Infrastructure	10	Feb-2022
18.	DealShare	E-commerce	1.62	Jan-2022
19.	DrawinBox	SaaS	1	Jan-2022
20.	LEAD School	Edtech	1.1	Jan-2022
21.	Fractal	SaaS	1	Jan-2022
22.	GlobalBees	Aggregator	1.1	Dec-2022
23.	Mamaearth	D2C	1.07	Dec-2021
24.	Pristyn Care	Healthtech	1.4	Dec-2021
25.	Slice	Fintech	1	Nov-2021
26.	Upstox	Fintech	3.4	Nov-2021
27.	Spinny	Marketplace	1.5	Nov-2021
28.	No Broker	Proptech	1	Nov-2021

OBJECTIVES OF THE STUDY

- To ascertain the need of startups in India.
- To comprehend the role of Startup20.
- To learn about the challenges that faced by startup ecosystem in India.
- To find out the initiatives taken in Startup20 for accelerating growth in startups.
- To assess the state wise ranking in startups in India

RESEARCH METHODOLOGY

This research paper is descriptive in nature. These data are gathered from secondary sources from various websites, publications, and news articles.

CONCEPTUAL BACKGROUND

Need of Startup20 and Its Potential for Change

Startups are crucial for promoting innovation and economic progress. In order to achieve the sustainable development goals (SDGs), they are essential. India, home to 107 unicorns valued at a total of $340.79 billion in 2022, is a prime example of this achievement due to their capacity for adaptation and flexibility in the face of shifting market circumstances. After China and the US, India now has the third largest start up ecosystem worldwide.

Startup20 is needed as startups from member countries can work together through the Startup20 engagement group to identify and address key issues in developing novel

products or services that address social and environmental challenges, collaborating with local communities and organizations to address issues like poverty, unemployment, crime, inequality, and climate change and utilizing their special talents and resources to promote change. Startup20 can be extremely important in promoting the SDGs and building a more just and sustainable future.

Role of Startup20

(a) Providing equal platform: Startup20 can give an equal platform to the G20 nations for the development of actionable guidance on various issues i.e., simplifying applications processes, streamline regulatory processes and to steer the complex rules and regulations.
(b) Meeting the challenges: it can help in meeting the various international level challenges by startups operating internationally like regulatory hurdles in entering new markets.
(c) Helps in collaboration: start up 20 acts as a medium of global contact that helps in collaboration which assist in knowledge sharing in top startups and companies and governments which hails from g20 countries.
(d) Easy navigation: this will become easy for companies to deal with problems like negotiating cultural differences, access to funding and capital and cross body regulatory compliance.
(e) Better alliance between G20 countries: it will encourage better association between G20 countries to maintain a healthy platform for startup ecosystem globally.
(f) Way over the gap among the developed and developing nation: Startup20 can ease the transfer of information, technology and resources by bringing together startups from both developed and developing nations and this will assist in encouraging the growth in developing nations.
(g) Coping political challenges: it will help in copying political challenges as many developing countries are facing struggle with lack of transparency with weak institutions.

Challenges Faced by the Startup's Ecosystem in India

(a) **Lack of funding:** A startup needs a lot of working capital in order to run the business. But there are numerous startups in India that are bootstrapped i.e., self-funded particularly during the initial stages of startups.
(b) **Strict regulatory environment:** It may be challenging for startups to comply with the rules. Startups may find it difficult to expand due to the complicated and legal regulations they must follow.
(c) **Lack of necessary infrastructure and logistics:** startups may find it challenging to reach clients and make deliveries on time due to insufficient transportation, warehousing, and logistics infrastructure. This may significantly impede their development and achievement.
d) **Poor revenue generation:** as business expands, poor revenue generating causes many companies to fail.

(e) **Lack of mentoring and guidance:** Startups usually lack access to mentors with relevant experience, which can make it difficult for them to comprehend the business climate and make sensible decisions.
(f) **Cut throat competitions:** It is very difficult for a startup to face the competitors during the initial stages as cut throat competition prevails.

Government Initiatives Taken for Accelerating Growth in Startups in Startup20

There are Various schemes launched by the government in order to encourage the startups:

1. Atamnirbhar bharat app innovation challenge
2. SAMRIDH scheme
3. Startup India seed fund scheme (SISFS)
4. Start up initiative
5. Start up leadership program
6. ASPIRE
7. Pradhan Mantri mudra yojana (PMMY)
8. Chunauti
9. Qualcomm semiconductor mentorship program (QSMP)
10. Digital India Bhashini
11. Digital India GENESIS
12. India water pitch- pilot- scale startup challenge
13. Ministry of skill Development and Entrepreneurship
14. ATAL Innovation Mission
15. eBiz portal
16. Dairy processing and infrastructure development fund (DIDF)
17. Support for International patent protection in electronics & information technology (SP-EIT)
18. Multiplier grants scheme (MGS)
19. credit guarantee fund trust for micro and small enterprises (CGTMSE)
20. Software technology park (STP)
21. The venture capital assistance scheme (VCA)
22. Loan for rooftop solar pv power projects
23. Newgen innovation and Entrepreneurship Development Centre (newGen IEDC)
24. Single point registration scheme (SPRS)
25. Modified special incentive package scheme (M-SIPS)
26. Stand up India scheme
27. Extramural research funding scheme
28. High Risk- High reward research
29. IREDA-NCEF Refinance scheme
30. Dairy Entrepreneurship Development scheme
31. Drone shakti

32. zero defect zero effect (ZED) certification scheme
33. Design clinic scheme for Design expertise
34. credit linked capital subsidy for technology upgradation (CLCSS)
35. sub-mission on agricultural mechanization (SMAM)
36. National initiative for developing and harnessing innovations (NIDHI).
37. Shangai cooperation organization (SCO) Start-up Forum
38. Women Entrepreneurship platform (WEP)

State Wise Ranking of Startups in India

States and Union Territories are divided into 5 categories for the purposes of the ranking: Best Performers, Top Performers, Leaders, Aspiring Leaders, and Emerging Start-up Ecosystems.

Table 1: States Startup Ranking Results 2021

Category	*State*
Best Performer	Gujarat, Karnataka
Top Performers	Kerala, Maharashtra, Odisha, Telangana
Leaders	Assam, Punjab, Tamil Nadu, Uttarakhand
Aspiring Leaders	Chhattisgarh, Delhi, Madhya Pradesh, Rajasthan
Emerging Startup Ecosystems	Andhra Pradesh, Bihar

Table 2: Top Startup States in India

State/Union Territory	*Number of Start-up Jobs Created (as on 30 June 2022)*	*Number of Start-ups Registered (as on 30 June 2022)*	*Total Start-ups since 2016 (2016–2022)*
Maharashtra	1,46,132	2,220	13,519
Karnataka	1,03,541	1,236	8,881
Delhi	87,643	1,345	8,636
Uttar Pradesh	67,694	1,233	6,654
Gujarat	51,193	973	4,920
Haryana	48,843	651	3,985
Telangana	44,649	657	3,875
Tamil Nadu	39,832	730	3,953
Kerala	28,451	487	3,277
Rajasthan	24,599	442	2,299
Madhya Pradesh	23,198	409	2,119

Source: Ministry of Commerce and Industry

SIGNIFICANCE OF THE STUDY

This study will help the new entrepreneurs in knowing about the initiatives that government are taking to promote the startups and this research will shed some insight on the obstacles and opportunities that faced by the new entrepreneurs.

CONCLUSION

The third-largest ecosystem in the world is being supported by the budding unicorns in India and their steadily spreading roots. India has lagged behind the US and China in terms of the number of unicorns due to Prime Minister Narendra Modi's goal to transform people into employment providers rather than job seekers.

The aforementioned information suggests that start-ups are crucial for generating employment prospects in India.

REFERENCES

[1] https://digest.myhq.in/top-10-government-schemes-for-startups-in-india/

[2] https://government.economictimes.indiatimes.com/blog/unveiling-indias-focus-on-start-ups-during-g-20-presidency/99009333

[3] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1839131

[4] https://pib.gov.in/PressReleasePage.aspx?PRID=1908407

[5] https://startuptalky.com/list-of-government-initiatives-for-startups/

[6] https://www.drishtiias.com/daily-updates/daily-news-editorials/india-s-startup-ecosystem

[7] https://www.financialexpress.com/industry/sme/startups-to-account-for-4-5-of-indias-gdp-over-3-5-years-study/2914976/

[8] https://www.forbesindia.com/article/explainers/unicorns-india-list/85309/1

[9] https://www.startupbooted.com/list-unicorn-startups-in-india

[10] Majumdar, R., & Mittal, A. (2023). Startup Financing: Some Evidence from the Indian Venture Capital Industry. *FIIB Business Review*, 23197145221142109.

[11] Mehra, S., Saini, J., & Kumar, S. (2023). Startup India and Competition Law: A Critical Study. *Journal of Data Acquisition and Processing*, 38(1), 4119.

[12] Satyanarayana, K., Chandrashekar, D., & Mungila Hillemane, B.S. (2021). An assessment of competitiveness of technology-based startups in India. *International Journal of Global Business and Competitiveness*, 16(1), 28–38.

Social Entrepreneurship in India: Opportunities and Challenges

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Abstract

India's gig economy is flying to newer heights and modern techs, owing to the surge of innovative start-ups and young entrepreneurs who are changing the rules of how businesses functioned. These young people do not only dream to achieve something big in life, but they also nurture their passion to resolve the social inequities holding the country back. The social and economic hardships in India can be overcome through the innovation and promotion of best practices and positive models as well as by explore good examples of social entrepreneurship. An entrepreneurial mind set is re-emerging in India as right from ancient times, India has been entrepreneurial. A major future challenge is the contribution of businesses to reduce the problems and work for the welfare of the society.

Social entrepreneurship is an important term of social responsibility and a way to solve a variety of urgent societal problems and the social enterprises today are in a myriad of adversities. A social entrepreneur might also seek to address imbalances in such availability, the root causes behind such social problems, or the social stigma associated with being a resident of such communities. The main goal of a social entrepreneur is not to earn profit rather he seeks to implement widespread improvements in society by keeping himself financially savvy to succeed. Social innovation is not the prerogative or privilege of any organizational form or legal structure. It is the process of developing and deploying effective solutions to challenging and often systemic social and environmental issues in support of social progress. The purpose of this paper to define the term of social entrepreneurship and social entrepreneurs. This paper derives the necessary information from several research papers including a literature review based on secondary data resources to highlight the relevance of the objectives of study. The paper attempts to shed light on the theme of challenges and opportunities facing the social entrepreneurship scene in India and acknowledging few successful of social entrepreneurs.

Keywords: *Social Entrepreneurs, Social Entrepreneurship, Social Needs, Social Innovation, Societal Challenges.*

INTRODUCTION

The development of a country depends upon its industrial development. Nobody can deny that the development depends upon every nation on its entrepreneurial competencies of the people. Entrepreneur are innovative, highly motivated and critical thinkers, when these attributes are joined together to solve social problems, a social entrepreneur is born. India being a young

nation provides a huge opportunity for social entrepreneurs. When these attributes are used to solve social problems, a social entrepreneur is born. A social entrepreneur identifies practical solutions to social problems. There is an increasing number of Governments paying attention to entrepreneurship policy and are subsequently implementing strategies in order to enhance the level of entrepreneurial activity in their nations (Minniti, 2008). Social entrepreneurship is the application of innovative, practical and sustainable approaches to benefit society in general (Schwab Foundation, 2012). India is well known nation for the entrepreneurial activities carrying the seeds of social concern.

Here, we have the field of social entrepreneurship emerging as a potent tool for solving social problems in an entrepreneurial way (Bornstein, D. 2004). While there are a number of social issues increasing in Indian markets, they offer some powerful opportunities for social entrepreneurships efforts to get rid of these issues. Initially, the terms social entrepreneur and social entrepreneurship were used in the 1960s and 1970s. The terms came into widespread use in the 1980s and 1990s, promoted by Bill Drayton the founder of Ashoka: Innovators for the Public (Austin, Stevenson& Wei-Skillern J 2006). This study shows that in India, a nation with innumerable issues relating social entrepreneurship. We undertake this study to understand opportunities and challenges faced by Indian social entrepreneurs. The research methodology used for the paper is secondary in nature. An empirical study is conducted by reading research papers to know the concept of social entrepreneurship, to ascertain the role and importance of social entrepreneurship in India, to know the challenges faced by social entrepreneurs, to know the scope and opportunities of social entrepreneurship.

SOCIAL ENTREPRENEURSHIP

Social entrepreneurship has become the buzz word in India and around the world. People have found this concept of philanthropy a bit intriguing in nature. It has the best mixture of social service and entrepreneurship; this combination makes it most attractive and so unique in nature.

Social entrepreneurship is not a newer concept but the positioning of the concept has risen to new heights in recent times. As government of India has made CSR a more realistic responsibility than a mere formality, corporates are now looking for their grater roles in helping the society in a way that is both economically and socially beneficial. As the definition of social entrepreneurship itself clarifies that its fine combination of entrepreneurship and societal gains.

Key Drivers for Social Entrepreneurship Action

- Social issues that receive less attention e.g., from government or private sector.
- Needs to raise funds and mobilize resources for charities.
- Changing donor paradigms for aid and change (e.g., sustainable investment).
- Increasing demand for corporate social responsibility.

WHO IS A SOCIAL ENTREPRENEUR?

A social entrepreneur is a person who pursues novel applications that have the potential to solve community-based problems. These individuals are willing to take on the risk and effort to create positive changes in society through their initiatives. Social entrepreneurs may believe that this practice is a way to connect you to your life's purpose, help others find theirs, and make a difference in the world (all while eking out a living).

- The four primary types of social entrepreneurs are community social entrepreneurs, non-profit social entrepreneurs, transformational social entrepreneurs, and global social entrepreneurs.
- Social entrepreneurs design their thinking around the 6 P's of launching an idea. Which stands for
    1. People: Identify Your Target Beneficiaries
    2. Problem: Select an Issue to Address
    3. Plan: Develop a Social Enterprise Strategy
    4. Prioritize: Examine Your Business Model
    5. Prototype: Test Your Business Model
    6. Pursue: Develop Your Social Enterprise

6 P's of Social Entrepreneurial Enterprises

As social entrepreneurs embark on turning their ideas into successes, they often work through the following six areas. Each of these categories are different resources, roadblocks, or stages a social entrepreneur must often encounter.

- **People:** Most social entrepreneurs start their endeavours by identifying what people they want to benefit. Sometimes, this is the people in their specific geographical region. Other times, this is people within a certain demographic (i.e. people with low income). Without a clear definition of who the social entrepreneur wants to serve, they will face difficulty in appropriately defining the scope of their enterprise. This puts the yet-to-be-created entity at risk of not having a clear vision.
- **Problem:** Social entrepreneurs try to fix problems. More specifically, social entrepreneurs identify a problem that the people in the previous section face. Usually, during the brainstorm phase of an entity, the social entrepreneur will link the two together. For example, social entrepreneurs may try to defeat homelessness in their region. A social entrepreneur in this situation tries to help certain people (low-income individuals) with a problem (lack of available housing).
- **Plan:** With the people and problem identified, a social entrepreneur must devise a plan to solve the problem. Social entrepreneurs not only strive to create a business plan to operate an entity, they must also determine how this type of entity will receive funding and remain financially sustainable. The social entrepreneur must also evaluate how external parties can help it achieve its social goals.

- **Prioritize:** One of the largest challenges for a social entrepreneur is a lack of available resources to tackle the problem they wish to solve. Whether that means not enough money, not enough specialized knowledge, or external forces that cannot be controlled, social entrepreneurs face many constraints. This means they must prioritize what they try to solve, how they go about operating, and what expansion looks like.
- **Prototype:** Because resources are limited, social entrepreneurs often test out solutions in small markets before expanding. This means creating prototype products, services, or processes. It also tests out how different funding and resources can help it achieve its goals. Though this stage may not foster trust in those who have provided an upfront investment with the social entrepreneur, other upfront investors may appreciate seeing a minimum viable product or prototype.
- **Pursue:** With the test case down, social entrepreneurs identify what went well and what didn›t go well. It often surveys those that helped put the solution together as well as those receiving the benefit. This last step closes the full loop of activity, though a social entrepreneur should periodically evaluate each aspect and continually monitor for ways to better make their social change.

Types of Social Entrepreneurs

Community Social Entrepreneur

A community social entrepreneur prioritizes the need of a small geographical region, usually the community it lives in. This type of social entrepreneur is less concerned about the specific nature of their endeavour; the primary purpose of their entrepreneurship is to benefit their local area.

This type of social entrepreneur often builds strong relationships in its community, taking advantage of relationships to leverage how resources flow within its town. Community members, local organizations, and the community social entrepreneur work together to make sure the needs of the community are met and partnerships that make sense are created.

Non-Profit Social Entrepreneur

Non-profit social entrepreneurs are the more common type of social entrepreneur where the entity has a broad stated goal that benefits someone but not necessarily their direct community. With the introduction of remote or online social entrepreneurship, it is now easier to create entities with broader mission-driven purposes.

Non-profit social enterprises usually operate very similarly to a business. The primary difference is the net profits of the non-profit enterprise are often returned back to the entity for further develop into programming. Instead of there being investors to make money, a non-profit social entrepreneur strives to spend as much money it can towards its mission.

Transformational Social Entrepreneur

As a start-up non-profit social enterprise grows, it often shifts into becoming a transformational social entrepreneur. As local non-profits grow, so can their mission. A transformational social

entrepreneur look to scale an operation from a single program to benefitting various areas. For example, consider the broad reach of Goodwill; what started as a small non-profit social enterprise transformed into a much richer, broader entity with many more rules and regulation.

Global Social Entrepreneur

Sometimes, social entrepreneur endeavors aren›t limited by borders or geography. Sometimes, people may try to solve overarching social concepts such as poverty, depression, or lack of living conditions. Usually, the social entrepreneur may try to solve an issue in a specific region. However, these deep-rooted issues are often not specific to a region. Many of the solutions discovered in one area may be attributable to another.

These types of organizations easily have the greatest reach. For example, consider the breadth of the Bill & Melinda Gates Foundation. Their endeavors to find vaccinations for various diseases impacting those around the world are a clear example of global social enterprises.

Social entrepreneurship continually evolves; what may be a local communal non-profit one year may model into a global social enterprise the next.

LITERATURE REVIEW

The literature review contains the work already done on the area of research in hand. Literature review is also needed for understanding the nature of the research topic in details so that according to that, researcher can mold his approach for the research topic. The literature review for the present study is as follows:

1. Daru, Mahesh and Gour, Ashok in their research paper title "Social entrepreneurship – A way to bring social change" (2013) writes that in the developing world, the Millennium Development Goals (MDG) might provide a valid operationalization of social needs. The MDG refer to the most pressing social problems to be addressed in the immediate future. They include goals such as eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria and other diseases In the developed world, opportunities for social entrepreneurs might arise, for example, from gaps in the social welfare system. More empirical studies are needed to map the opportunity space for social entrepreneurs and to examine whether and how the nature of social opportunities affects the entrepreneurial process.
2. Singh, Pratap, Dr. in his research paper title "Social Entrepreneurship – A growing trend in Indian economy" (2012) underlines that Social entrepreneurship is the recognition of a social problem and the uses of entrepreneurial principles to organize create and manage a social venture to achieve a desired social change. While a business entrepreneur typically measures performance in profit and return, a social entrepreneur also measures positive returns to society. Thus, the main aim of social entrepreneurship is to further broaden social, cultural, and environmental goals. Social entrepreneurs are commonly associated

with the voluntary and not-for-profit sectors, but this need not preclude making a profit. Social entrepreneurship practiced with a world view or international context is called international social entrepreneurship. A well-known modern social entrepreneur is Muhammad Yunus, founder and manager of Grameen Bank and its growing family of social venture businesses, who was awarded a Nobel Peace Prize in 2006.

3. Sivathanu Brijesh, Bhise Pravin Dr. in their research paper title "Challenges for Social Entrepreneurship" (2013) states that social entrepreneurship has emerged to a great extent & well appreciated now a days. The Social entrepreneur needs to be innovative, socially aware & risk lover. In their research they used primary data along secondary. They used questionnaire method for data collection, & their study revealed that various challenges faced for social entrepreneurs like conveying business ideas, working remotely, getting funds competition, acquiring technologies etc. they also states that in spite of so many challenges various successful social entrepreneur exist in the market, because of good scope in India in near future.
4. Rawal Tripda in her research paper title "A study of social entrepreneurship in India "(2018) states that social entrepreneurship is subject to challenge & these challenges can be addressed & measure by proper planning. The study also identifies the fundamental traits of social entrepreneurship. In this present study, researcher states the role & responsibility of entrepreneurs. In this study researcher used secondary data which is collected through various websites, research papers& published reports of govt. bodies.

RESEARCH METHODOLOGY

The research methodology which is applied during the research study is descriptive in nature. The data collection of data is done on secondary basis and the research is strictly done to meet the objectives set previously for the present research. The data and information which is furnished in the study is taken from the various secondary sources.

OBJECTIVE OF THE RESEARCH

1. To study social entrepreneurship with its basic framework.
2. To underline the roles and responsibilities of social entrepreneurs in India society.
3. To study the overall contribution of social entrepreneurship and social enterprises in India.
4. To list out the challenges faced by social entrepreneurship in India.
5. To give suggestions to face prevailing challenges for social entrepreneurship in Indi

OPPORTUNITIES FOR SOCIAL ENTREPRENEURS IN INDIA

Renewable energy is not the only option for entrepreneurs who are planning to tap social sector of India.

Looking out for the best business to start with minimum capital investment? And moreover, are you planning to tap social sector of the country? Yes, then you must definitely read this.

For the uninitiated, Socio-preneurs are individuals with innovative solutions to society's most pressing social problems. These folks are full of enthusiasm to tackle social issues by offering new ideas to bring about large scale changes in the society.

'Clean and Green India 2016' conference that took place recently in Delhi highlighted the opportunities for social enterprises in the Clean and Green India movement with specific focus on water, waste management, Infrastructure, etc..

Here we are listing some untapped opportunities for the budding entrepreneurs:

Waste Management

In a country like India, solid and liquid waste management are undoubtedly the corner stone for a clean and green India. It is clearly an area of focus.

In Indian context, this is a journey or race with no 'finish line'. On the ground, various solutions, best practices and business models have emerged. In some areas, we see some cases of dramatic turnarounds. In many other cases the situation is only worsening owing to delays and at best inaction. Progress is visible in the space of solid waste management. Sewage or liquid waste management is still largely left to traditional approaches and conventional systems that either don't work or are fraught with gaps in implementation.

The current solutions are infrastructure based, require large investments and are always on a catch up mode. But you as an entrepreneur you can tap this unexploited space with you innovate idea and can churn out money from here.

Deep Cleaning Services

To keep India clean and green Prime Minister Narendra Modi has initiated the Swatch Bharat Campaign. But only initiating such campaign won't make India clean. We need to work together towards this ambition to make our country tidy.

And for aspiring entrepreneurs this a great sector to tap. Cleaning industry is still untapped and it needs young blood to step in and change the face of the sector by using their innovative skills and techniques.

Green Infrastructure

Green Infrastructure is vital in providing and connecting life support systems for urban environments. It includes parks and reserves, gardens, waterways and wetlands, streets and transport corridors, pathways and greenways, squares and plazas, roof gardens and living walls, just to name a few. This space provides huge opportunities for entrepreneurs to meet India's green infrastructure needs in 2016 and beyond.

Water Management

Water is one of the most important element of life. But the scarcity of drinking water, is appalling. In today's time, access to clean water is the biggest achievement for any family

living in remote areas of the country. You, being an entrepreneur, can look into this matter and figure out the best way to solve this problem with the help of your entrepreneurial skills.

CHALLENGES FACED BY SOCIAL ENTREPRENEURS

Social enterprises are fast emerging as an entity of the alternative economy. When the traditional economic systems of a country or market-based solutions fall short to ensure well-being in the society, social enterprises can spearhead disrupting models to solve burgeoning social problems. But the social enterprises face a myriad of challenges and adversities. Some of these challenges are more contextual and some are generic in nature. Among the many challenges the following four appears to be more obvious and general regardless of the context and other influencing factors:

Investing in the Right People

Hiring the right people to compliment the skill set of founders is an essential part of scaling up for every enterprise. The social sector is no different as the skills required to sell, brand, and manage financials are specialised. Many cash-strapped founders over-extend themselves, multi-tasking product development, fund raising, and running the business. While this may work in the short run, it eventually leads to sub-optimal performance. As without the right team – an organisation will not grow.

A social entrepreneur in the environment sector once informed me that they were unable to afford the right people. Plus, expensive resources don't perform in the short run (as they don't know the category) and leave because they don't meet targets. This leads to churn and re-hiring. So, founders prefer to do both operations and fund raising by themselves. Eventually, this company, which has great products, ended up stagnating and becoming limited to specific geographies. In my experience, all companies who want to scale up face these challenges. The successful ones find a solution that works for them. Without the right people and a proper, fact-based business plan, growth is difficult in the long run.

Building a Ground Up Business Plan

All enterprises need a strong ground-up business plan to help achieve milestones. The rigour of building and following a plan that is based on market realities and customer insight is critical. It ensures adequate focus on both raising funds and meeting operational targets. Founders also find themselves more in tune with the market and their end customer requirements as they chase well-defined business targets and part of the scaling up process. Plus, an action-oriented team with a strong business plan instils confidence in the investor community, as eventually the social enterprise will need to become profitable.

However, many so. Building and following a ground up business plan All enterprises need a strong ground-up business plan to help achieve milestones. The rigour of building and following a plan that is based on market realities and customer insight is critical. It ensures adequate focus on both raising funds and meeting operational targets. Founders also find

themselves more in tune with the market and their end customer requirements as they chase well-defined business targets and part of the scaling up process. Plus, an action-oriented team with a strong business plan instils confidence in the investor community, as eventually the social enterprise will need to become profitable. However, many social entrepreneurs are visionaries who do not have much experience in running a business. This aspect of planning and evaluating performance vis-à-vis metrics in a systematic manner may be a new experience for them.

However, many social entrepreneurs are visionaries who do not have much experience in running a business. This aspect of planning and evaluating performance vis-à-vis metrics in a systematic manner may be a new experience for them.

Lack of Funding Support

Funding is by far the biggest challenge for the social enterprises. Literature identified that most social enterprises failed to secure start-up capital. Given that most of the social entrepreneurs are individual entities, it is therefore difficult to accumulate enough funds at the beginning. Over time some ventures flourish but a vast majority of the ventures struggle to maintain its existence and sustainability due to capital or ongoing sources of income. The traditional support mechanisms, such as – bank or financial institutions that foster the development of social enterprises is quite scarce as compared to commercial enterprises. This is quite evident in most of the countries as the extant literature suggests and apparent from the discussion with the participants. This is to a lot extent due to the fundamental misconception that socially driven organisations are not profitable and there is risk involved whether to money being lend will be given back or not. Therefore, social entrepreneurs struggle to accumulate the required capital and mostly invest their own savings to tackle social problems.

Ability to Scale-up

Social enterprises primarily spring up from the social inequity or the market failure when the traditional systems are not enough to meet the needs. The primary problem-involving majority of the social enterprises is that, it lacks the ability to scale-up the enterprise to the next level. Most of the time it starts with immense enthusiasm or a social outlook to address any specific problem. However, the lack of support and structured polices affect the social enterprise to scale it up to the next level. Partly due to the discontent across the societies and the scepticism towards socially driven actions which is mostly neglected. This also affects the sustainability of the social enterprises. Given that most begin with addressing social problems where the government support is scarce, the expansion opportunities become limited overtime due to resource constraints.

Lack of Proper Business Strategy

Another major challenge that most social enterprises face is the lack of proper business strategy leading to non-competitive products. Given the focus largely remains on social needs that to

some extent impedes the development of the actual product or service offered by the social enterprise. This also hinders the development of a proper business strategy to compete in the market as many of the social enterprises compete with commercial enterprises. In addition, another fact is that the social entrepreneurs often embark on the journey without having any prior business background which is entirely out of goodwill. Due to this most of them would not have the required managerial skill allowing them to plan, undertake strategic planning, financial forecasting etc. Therefore, the poor strategy argument can be a precipitant to the challenge of fund raising, hinting on that the organisations that are documented by literature as facing financial challenges might actually be facing a strategy deficiency and not a financial deficiency.

Some other challenges are as below:

- Conveying the business idea
- Working remotely
- Business people support
- Government approval
- Maintaining quality
- Sustaining employees
- Rival firms
- Promoting awareness
- Acquiring modern technology

SUCCESSFUL SOCIAL ENTREPRENEURS IN INDIA

Ria Sharma

Ria Sharma, hailing from Dahanu, Maharashtra, is a well-known social entrepreneur in India. In 2014, she returned to India from the UK to make a documentary on the acid attack survivors. It was in the same year that she founded the organization "Make Love Not Scars" (MLNS) to support the victims of acid attacks. The statistics show that the survivors are mostly women, and the crowd-funded organization does its best to help them both mentally and physically. The organization helps the victims by getting them jobs so they can support themselves and their families.

Ria Sharma was the first to establish India's rehabilitation centre for survivors of acid attacks and held various campaigns to end the sale of acid, which gained a lot of recognition.

Saalumarada Thimmakka

Saalumarada Thimmakka is an Indian social entrepreneur as well as an environmentalist, from the state of Karnataka. She is often referred to as Aala Marada Thimmakka and is known for planting and tending to 385 banyan trees and further planting 8000 other trees. Her thinking and services changed the environment for the better and contributed to our society.

Saalumarada's efforts to make the environment a better place and her love for trees earned her the title "Vriksha Maate", which means Mother of Trees. She has achieved various awards for her service, including the Padma Shri Award.

Urvashi Sahni

Talking about the best of social entrepreneurs in India, Urvashi Sahni definitely tops the list. She is the founder and CEO of SHEF (Study Hall Education Foundation), an organization dedicated to offering education to the most disadvantaged girls in India. Urvashi Sahni has worked with over 900 schools and changed the life of 150,000 girls (directly) and 270,000 girls (indirectly) with her program. She was rightly felicitated with the 'Social Entrepreneur Of The Year' award in 2017 for her selfless act of dedication and passion.

Anshu Gupta

Born in a middle-class family in Uttar Pradesh, took media as a profession and while as an intern he witnessed the need of proper clothing for the poor in rural India. Anshu then founded Goonj, a social enterprise that collects used clothing from the urban crowd, sort them, fix and later distribute among the poor and needy. The relief work was done by Goonj during the times of natural calamities in Gujarat, Tamil Nadu and Kerala have been highly acknowledged.

Sumita Ghose

Sushmita Ghosh is the founder of Ashoka Changemakers, an open-ended platform for social innovation that was one-of-its-kind in the world. Sushmita aims to revive the craftsmanship and talent that is unharnessed in rural India and aims to provide them with their deserving recognition. She started with 'Rangasutra', a retail chain from FabIndia and it turned out to be a huge success.

Ajaita Shah

Ajaita Shah works with a mission to empower rural India. She started at the gross level and aims to provide the best of technological solutions to the remote villages in India at the cheapest price possible. Ajaita Shah is the Founder & CEO of Frontier Markets that supplies solar energy powered products to rural India at an extremely affordable cost. The company has sold over 10,000 solar solutions until now and there is no stopping them until they light the remotest corners of the country.

Other Social Entrepreneurs in India

A few other social entrepreneurs in India are listed below:

- Chetna Sinha (Mann Deshi Bank)
- Priyanka Agarwal (Wishberry)

- Varun Sheth (Krishi Cress)
- Swati Raj (Purple Jugaad)
- Akshay Anant (Dream a Dream)
- Pushpa Bector (Sammaan Foundation)
- Sanjay Sethi (Chintan)
- Dinabandhu Sahoo
- Akansha Hazari
- Nand Kishore Chaudhary
- Karthik Naralasetty

CONCLUSION

Social enterprises play a key role for the development of our country. They help alleviate poverty, bring about hope, and provide people access to a brighter future.

However, like all organisations, social enterprises face challenges while scaling up. Most of them are related to funding, people, process, and technology. In order to grow, the founders need to acknowledge the issues and work towards addressing the same.

In India, social entrepreneurship has emerged to a greater extent and is well appreciated. There are many challenges faced by the social entrepreneurs like conveying the business idea, working remotely, getting fund, government approval, competition from others, acquiring technologies, promoting awareness and getting skilled workers. Though these challenges exit there are many successful examples of social entrepreneurial ventures like Lijjat Pappad, Amul & Gramin Bank. There is lot of scope for social entrepreneurs in India. India is experiencing an increase in social entrepreneurship and attempts by social entrepreneurs to find affordable solutions to various social problems of society. With changes in technology and increasing competition, social entrepreneurs have to become more dynamic.

In conclusion, governments have a crucial role to play in fostering entrepreneurship. By implementing the strategies discussed in this article, such as providing access to funding, reducing bureaucratic red tape and creating a supportive legal framework, governments can positively impact the entrepreneurial landscape and drive economic growth and job creation. Entrepreneurship is not just about starting a business; it's about creating opportunities, driving innovation and fostering economic development. Governments that support and encourage social entrepreneurship not only help individual entrepreneurs but also contribute to the overall well-being of their economies and societies.

REFERENCES

[1] Daru, Mahesh U. & Gaur, Ashok (2013), "Social Entrepreneurship – A way to bring Social Change", *Innovative journal of Business and Management*, ISSN: 2277-4947.

[2] Gunjan Sharma, & Kushagra Kulshreshtha (2014), "Challenges and Opportunities of Entrepreneurs in Emerging Economies", *International Journal of Public Administration and Management Research*, Vol. 2, Issue 3, pp. 1–8.

[3] N. Santhi, & S. Rajesh Kumar (2011), "Entrepreneurship Challenges and Opportunities in India", *International Journal of Industrial Engineering and Management Science*, Vol. 1, pp. 14–16.

[4] Rawal Tripda (2018), "A Study of Social Entrepreneurship in India", *International Research Journal of Engineering & Technology*, Vol. 05, No. 01.

[5] Singh, Pratap (2012), "Social Entrepreneurship: A Growing Trend in Indian Economy", *International Journal of Innovation in Engineering and Technology*, Vol. 1, Issue 3, ISSN: 2319-1058.

[6] Sivathanu Brijesh, Bhise Pravin Dr. (2013), "Challenges for Social Entrepreneurship", *International journal of Application or Innovation in Engineering & Management*, ISSN 2319-4847.

Webliography

[7] Social Entrepreneur: Definition and Examples (investopedia.com)

[8] Social Entrepreneurship: Definition, Types and Examples - Harappa

[9] https://yourstory.com/socialstory/2019/06/five-challenges-social-entrepreneurs-india

[10] 8e5f0923dc0e3988cd00b8fbe2aaeb8c. Social Entrepreneurship in India Opportunities and Challenges.pdf (ijesc.org)

[11] https://digest.myhq.in/social-entrepreneurs-in-india/

MSME Sector in Haryana: Prospectus and Status

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Abstract

Small and medium-sized enterprises (SMEs) are the backbone of any nation's economy, contributing to its expansion through product production, international trade, and job creation. More than 40% of total exports contribute to producing over 6,000 different items, providing direct or indirect employment to more than 70 million people. Employment opportunities in this industry have helped raise living standards in previously underdeveloped regions. It is a crucial component of the industries that promote economic growth and social justice in India. This study examines the current state of MSMEs in the manufacturing and service sectors in the Indian state of Haryana, as well as the employment opportunities available within. Researchers have collected data on MSMEs in Haryana State from 2011 to 2020, and analysed it using various methods such as average annual growth rate (AGR), compound annual growth rate (CAGR), and mean value. Statistics were tallied and separated according to the following categories: total number of registered units, ownership structure, socio economic category, kind of enterprises and the number of jobs produced annually by MSMEs from 2011 to 2020 has also been analysed.

Keyword: *Activities, Category, GDP, Investment, MSMEs and Units.*

INTRODUCTION

Micro, small, and medium-sized businesses (MSMEs) are the lifeblood of any developing economy (Tripathy, S. N. 2021), the contributions of this industry to GDP, employment, industrial production, and international trade are substantial. This is a cornerstone of the economy that helps the country develop in myriad ways. More than 40% of the country's exports come from this industry, which employs more than 60 million people and accounts for 8% of the country's GDP (Gaikwad, A. et al., 2020). Domestic production, transformation, regional development, GDP growth, job creation, improved entrepreneurial skills; social empowerment, export, etc. are just some of the many benefits that come from this industry (Sharma, G., 2022). The Indian economy is one of the fastest-growing in the world. Small and medium-sized enterprises (SMEs) in India are so important to the economy that they are called "growth engines" (Neg, P., and Kaur V.S., 2019). Multiple indicators, including the number of units, output, employment, and exports, suggest that the Indian MSMEs sector has advanced extraordinarily. When given the proper set of support frameworks, this industry is capable of significantly increasing its contribution to the Indian economy (Nema D.K., 2021).

The Government of India revised the concept of "Small Scale Industries" (SSIs) in 2006 to make them more efficient and productive. Large-scale businesses combine with smaller businesses, creating medium-sized businesses. Since then, SSIs have become known as MSMEs. The Union Cabinet has again updated the definition of MSMEs in July 2020. The government has increased the maximum amount that micro enterprises can invest in plant and machinery for manufacturing and service businesses from 25 lakhs to 1 crore. According to the Annual Report of the Government of India's Ministry of Micro, Small, and Medium-Sized Enterprises for 2020-21, the ceiling for turnover has been increased from Rs. 5 crore to Rs. 10 crore for small scale enterprises, from Rs. 5 crore to Rs. 50 crore for medium-sized enterprises, and from Rs. 10 crore to Rs. 50 crore for medium-sized enterprises**.** A total of 633.88 million MSMEs were registered in India in 2020–21, with 3.31 million (0.005%) classified as small businesses, 0.05 million (0.0008%) as medium businesses, and 630.52 million (more than 99%) classified as micro-enterprises.

According to the Annual Report of the Government of India's Ministry of Micro, Small, and Medium Enterprises for 2022-23, With an anticipated 630,52 lakh enterprises, the micro sector accounts for more than 99% of the total estimated number of MSMEs. The small sector, with 3.31 million estimated MSMEs, and the medium sector, with 0.05 million estimated MSMEs, accounted for 0.52% and 0.01%, respectively, of the total estimated MSMEs, 49.72 million businesses were registered under the general category of entrepreneurs, 16.55 million under the SC/ST category, and 33.74 million under the other kind. By creating jobs, (Elayaraja, M. &Vijai, C. (2020) showed how vital MSMEs are to reducing regional disparity and preserving a fair distribution of the country's wealth, resources, and national income possibilities for underdeveloped and rural regions. The current performance and future prospects of MSMEs are examined by Satyendra, P.S., & Rashmi, K., (2018). The country's liberalisation the state governments' and the central government's plans and policies were deemed to be more appropriate and helpful for the development of MSMEs across the country. According to research by Zanjurne, P., 2018, the micro, small, and medium-sized enterprise (MSMEs) sector has been consistently instrumental in the creation of jobs in underdeveloped regions and the provision of goods at reasonable costs. Despite facing significant obstacles, this sector contributes 40% of exports, 42% of million employments, 45% of industrial units and output, and more than 8,000 products to the Indian economy. Singh, A., (2022) examines the definitions, performance, and function of MSMEs in the modern economy. The report also sheds light on the opportunities and threats that this industry faces in India. The key benefits of this industry are the little capital needed to get started, the efficient use of existing resources, and the rapid creation of new jobs, all of which contribute to the economy's social and economic growth Mohanty, J.J. (2018). There is a lot of vitality in India's micro, small, and medium enterprise sector. It's crucial to the country's economic growth since it helps create jobs and lower poverty rates. After the agricultural industry, this one is responsible for the most new jobs each year (Bawa et al., 2020). As per (Bhargava S. 2019), micro, small, and medium-sized enterprises (MSMEs) are in favour of continuously providing employment and new opportunities to the disadvantaged.

In India, there are 63.05 million microenterprises, 0.33 million small businesses, and 5,000 medium businesses. In 2020–21, this industry will account for 34.98% of India's manufacturing output, up from 36.68% in 2019–20. According to India's 73rd National Sample Survey (2015–16), the country's micro, small, and medium-sized enterprises (MSMEs) employed almost 111 million people. The manufacturing industry employs 11.10 billion people, the service sector employs 362.82 million, and the trade sector employs 387.18 million. The manufacturing industry employs 32.5% of the labour force, while retail commerce employs 34.9%, and the "other services" category, which includes the food industry and transportation, employs 32.6%. In addition, in 2018, 96.9% of all jobs were found in the micro sector, 2.9% in small businesses, and 0.2% in medium businesses. Thus, the micro-enterprise sector employed 1076.19 lakh people, the small-enterprise sector 3.31 lakh, and the medium-enterprise sector 1.75 lakh (Annual Report on MSMEs, 2021-22).

MSMEs AND HARYANA

Haryana, previously known as Greenland, was admitted as India's 17th state on November 1st. The industrial sector currently ranks second in importance to the state's economy. It proved the state's robust manufacturing sector. About 88,014 MSMEs businesses are actively supported by the government of Haryana (Boora, A., & Nidhi, D., 2019). The state of Haryana has made amazing strides in every economic arena. Small and medium-sized enterprises (SMEs) are a key part of the state's economy since they help alleviate issues like income inequality, poverty, and unemployment. More individuals were put to work for the same amount of money in this industry (Kumar, J., 2018). The state's MSMEs have left significant marks in the automobile, food and beverage, textile, metal, and automotive industries. Panipat, Gurugram, and Faridabad have the most medium-sized businesses, whereas Panchkula, Ambala, Kaithal, Rohtak, and Karnal are home to the most traditional micro and small businesses (Haryana MSMEs policy, 2019). Kavita (2020) portrayed the state of rural businesses in Haryana at the time of her writing. Secondary data from the Udyog Aadhaar Memorandum, including information on the number of units, economic status, gender of employees, and number of businesses studied, was used to compile this report. According to the data, out of all the businesses in the state, 79.97% are classified as microenterprises, 19.08% are classified as small enterprises, and 0.93% is classified as medium enterprises. The expansion and effectiveness of the MSMEs sector in terms of the number of units and employment were portrayed by Verma N.M.P. & Altaf, A. (2018).

The industrial and manufacturing sectors are the fastest-growing in Haryana's economy. Textiles, food and beverages, automobiles, metals, and engineering goods are the mainstays of Haryana's micro, small, and medium-sized enterprises (MSMEs). Ambala, Rohtak, Karnal, and Panchkula have the highest concentration of SMEs, whereas Faridabad, Gurugram, and Panipat are home to the largest MSMEs in the manufacturing sector. To support micro, small, and medium-sized enterprises (MSMEs), the government of Haryana has released the "Haryana MSME Policy-2019." The 2019 Haryana MSMEs Policy intends to increase

comprehensive and balanced regional growth by improving infrastructure for existing firms, creating new jobs, and stimulating innovation.

REVIEW OF LITERATURE

A study by Anjesh, H.L., and Rathod, G.V. (2020) reveals the importance of the MSMEs sector in creating jobs for a country's workforce at a low cost of capital. The primary purpose of this article is to shed light on the contribution of this industry to the creation of new jobs. The information comes from several sources, including the DIC, essays, journals, etc. Microsoft Excel, IBM's Statistical Analysis, and SPSS's Correlation and Graphing Packages are used to examine the data. According to the findings, employment creation was at its lowest in 2006–07 and at its peak in 2015–16. The research also found that there is a connection between MSMEs' investment and the number of jobs they create. The primary purpose of Bawa, S. S., Sharma, T., & Shelly, R.'s (2020) research is to quantify the expansion of the micro, small, and medium-sized enterprise (MSE) sector in terms of the number of units, the proportion of GDP contributed, and the number of people directly and indirectly employed. The study emphasised the issues and future job opportunities that will be created by this sector. The goals are analysed using compound annual growth rate (CAGR) and percentage methods. According to the results of this research, the micro, small, and medium-sized enterprise sector is the country's primary driver of economic growth, job creation, and exports. The study by Garg, I., Yadav, A., & Bansal, S., (2019) examines the correlation between the quantity of units and the availability of jobs using statistics from 2009 to 2016. The information comes from the MSMEs website's annual reports. Measures such as the standard deviation, coefficient of variation, mean, r, and trend values are applied to the data. Researchers also discovered that the quantity of units was a critical factor in creating new job openings.

According to the research conducted by Mathur, A., & Rathore, R. (2019) both highly skilled and low-skilled individuals can find work in the thriving MSMEs industry. Approximately 40% of the labour force is employed in this industry, either directly or indirectly. This research relies on secondary sources to emphasise the challenges encountered and offer solutions. According to the research, the commercial sector is home to 230.35 lakh establishments. There is a significant reduction in regional imbalance because of the contributions of this sector, which include exports, production, and manufacturing. In his study, Mohanty, J.J., (2018) tries to assess the industry's performance and the government's initiatives to improve it. The state and recent success of this dynamic industry were highlighted in this study. Secondary data has been employed, and these have been analysed with statistical methods like percentage and CAGR, to reach the paper's goal. According to the results, this industry is crucial to the expansion of the global economy. The research shows that the number of units and jobs in this industry are on the rise. There is a strong correlation between the number of units and the number of jobs they create. According to Prakash, R.M. (2019), the micro, small, and medium-sized enterprise (MSE)

sector plays a crucial role in eliminating regional imbalance in rural and backward areas by offering job opportunities at a low cost as compared to large companies. The number of units and the number of people employed by the industry were both revealed by this research. Secondary information was gathered for this study from the MSMEs division websites. To get to the research's end goal, we employ statistical methods like percentages and ANOVA. Semvam, P.M. (2021), analysed the effectiveness and significance of India's micro, small and medium-sized enterprise (MSME) sectors. This industry produces a diverse array of goods and services to satisfy the needs of consumers both domestically and internationally. This industry is crucial in supplying jobs to underdeveloped and rural areas. Equalising the distribution of national wealth and income is another important function of this industry. The study relied on secondary sources of information and concluded that the government should implement a programme of promotion and skill development to boost the sector's productivity and growth. Yagnik, J. (2021) in his research on the performance indicators of this sector, firm formation and employment generation were studied. During the study period, we gathered data from the Fourth Census Report and other annual reports to determine how the number of newly formed MSMEs and the number of people employed changed. According to the data, both the number of MSMEs and the number of jobs provided by them are on the rise, but the rate at which new jobs are being created is higher. According to the data, the number of jobs provided by this industry is expected to drop to 1.58 in March 2020, down from 2.17 in 2005–06 and 1.75 in 2015–16. He continued by saying that there is a need to advocate for a strategy to address the difficulties posed by the decline in employment opportunities in this industry. The purpose of this research, as stated by Kavita (2020), is to evaluate the development of rural businesses in Haryana. Based on secondary data collected from the Udyog Aadhaar Memorandum, this study looks at how different types of businesses in the state are structured, finding that the vast majority (79.97%) are classified as micro-units, while only 19.08% are classified as small enterprises, and only 0.93% are classified as medium enterprises. This study by M. Elayaraja and Dr. C. Vijai (2020) sheds light on the state of MSMEs in India at the time of writing. Small and medium-sized enterprises (MSMEs) are given special attention in this article. By creating jobs in rural and underdeveloped areas, these industries help level the economic playing field across the country. According to the research of Negi, P., &Kaur, V. S., (2019) "Micro, Small, and medium-Sized Enterprises Play a Key Role in the Development of the Country, and are Thus Considered to Be 'Growth Engines' of the Economy." This report examined the current growth, performance, and government programmes aimed at bolstering the nation's micro, small, and medium-sized enterprises (MSMEs). Secondary data used in this work comes from sources including MSMEs' annual reports, periodicals, reports, and other pertinent research papers. Micro, small, and medium-sized businesses in India are the focus of a new article by Khanna, R. & Singh, P. S. (2018). The study also provides an analysis of the success and prospects of MSMEs since the liberalisation of the economy. The study's author also detailed the policies and programmes established by the government to help the nation's micro, small, and medium-sized enterprises develop. The purpose of this research (Zanjurne, P., 2018) is

to assess the condition of MSMEs in India. In addition to supplying low-cost goods, this industry helps boost employment in underdeveloped regions. More than 8,000 goods, 45% of industrial units and output, and 40% of exports all come from this industry. The article also highlights the key difficulties encountered by the industry in India. This study by Singh, A., (2021) emphasises the significance and current standing of MSMEs. This study compares and contrasts the definitions, performance, and function of micro, small, and medium-sized businesses in the present. Both the problems and potential of this industry in India are discussed in this article. N. M. P. Verma and A. Altaf Ahmed conducted this study in 2018, and it was entirely based on secondary sources, information compiled from yearly reports, periodicals, the DIC, and J&K. The primary purpose of this research was to analyse MSMEs' expansion and performance in terms of both business unit count and employment levels. The research confirmed that MSMEs are consistently expanding and contributing to the state's labour market. This study argues that funding, infrastructure, and transportation are needed from state and federal governments in order to grow this industry.

OBJECTIVE OF THE STUDY

The purpose of this study is to examine the current status of registered MSMEs in the state of Haryana in terms of number of unit's activity wise registered enterprises, i.e. manufacturing and service firms, as well as the number of jobs created by these units.

The number of registered units, types, and categories of businesses in Haryana will be used to draw conclusions about MSMEs.

METHOD OF STUDY

Articles, research papers, journals, yearly reports, websites, reports, and publications will all help with this research paper. The data comes from studies that have been published as well as others that have remained in draught form. Our article also analysed secondary data from the Director of MSMEs, Panchkula, Haryana's covering the years 2011 to 2021 and analysed it using various methods such as percentage, average annual growth rate (AGR), compound annual growth rate (CAGR), and mean value. The data has been separated into categories, including the total number of MSMEs registered in the state, the types of units registered, forms of ownership, the registered under social categories and the types of activities registered under.

ANALYSIS AND INTERPRETATION

Table 1 reveals the total number of micro, small, and medium enterprises in Haryana registered between 2011 and 2020. During the study period, micro enterprises made up 83.43 percent of all businesses, followed by small (16%) and medium-sized enterprises (0.58%). The average of micro-organisations (15831.9), small and medium-sized businesses (3035.8), and medium-sized enterprises (109.5) verify this. With the exception of 2013; 2018; 2019; and 2020, the

Table 1: Registered MSMEs Enterprises (Units)

Years	*Micro*		*Small*		*Medium*		*Total*	
	No. of Units	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*
2011	3284		1591		96		4971	
2012	4459	35.78	1771	11.31	99	3.13	6329	27.32
2013	4912	10.16	1810	2.20	81	–18.18	6803	7.49
2014	7796	58.71	2291	26.57	76	–6.17	10163	49.39
2015	11922	52.92	3162	38.02	104	36.84	15188	49.44
2016	16680	39.91	3757	18.82	132	26.92	20569	35.43
2017	25888	55.20	5801	54.41	188	42.42	31877	54.98
2018	31360	21.14	4837	–16.62	140	–25.53	36337	13.99
2019	25396	–19.02	3858	–20.24	114	–18.57	29368	–19.18
2020	26622	4.83	1480	–61.64	65	–42.98	28167	–4.09
Total	26622	259.63	30358	52.83	1095	–2.12	189772	214.77
% of Total	83.43%		16%		0.58%		100%	
Mean	15831.9		3035.8		109.5		18977.2	
AAGR	25.96%		5.28%		–0.21%		21.47%	
CAGR	26%		-1%		-4%		21%	

Source: Directorate of MSMES, Panchkula

micro enterprise annual growth rate was positive and higher over the study period. Both the average annual growth rate (25.96%) and the compound annual growth rate (26%) for micro units were higher than those for SMEs. The compound annual growth rate (CAGR) of micro enterprises is 26%, which is greater than the overall growth rate (21%), whereas the CAGR of both small and medium enterprises is negative (–1% and –4%, respectively).

Table 2: Activity wise Registered MSMEs in Haryana

Year	*Manufacturing Units*				*Service Units*				*Aggregate*		
	No. of Units	*% of Total*	*AGR*	*Yc*	*No. of Units*	*% of Total*	*AGR*	*Yc*	*No of Units*	*AGR*	*Yc*
2010	3082	44.70		1763	3813	55.30		1763	6895		60699
2011	2535	51.00	–17.75	4986	2436	49.00	–36.11	4986	4971	–27.90	72695
2012	2984	47.15	17.71	8209	3345	52.85	37.32	8209	6329	27.32	84691
2013	3108	45.69	4.16	11432	3695	54.31	10.46	11432	6803	7.49	96687
2014	4213	41.45	35.55	14655	5950	58.55	61.03	14655	10163	49.39	108683
2015	6265	41.25	48.71	17878	8923	58.75	49.97	17878	15188	49.44	120679
2016	8915	43.34	42.30	21101	11654	56.66	30.61	21101	20569	35.43	132675
2017	13258	41.59	48.72	24324	18619	58.41	59.76	24324	31877	54.98	144671
2018	14965	41.18	12.88	27547	21372	58.82	14.79	27547	36337	13.99	156667
2019	11352	38.65	–24.14	30770	18016	61.35	–15.70	30770	29368	–19.18	168663
2020	9887	35.10	–12.91	33993	18280	64.90	1.47	33993	28167	–4.09	180659
r	0.98										

Source: Directorate of MSMEs, Panchkula

Nutshell, the micro enterprises mean values, AAGRs, and CAGRs was higher than that of small and medium-sized businesses during the study period.

Table 2 shows the types of business activities wise registered micro, small, and medium-sized enterprises in Haryana state over the study period. Out of total between 35% and 51% of enterprises were in the manufacturing sector. It had a negative and fluctuating annual growth rate. In 2017, it was 48.72%; in 2019, and -24.14%. The value of trends has been rising. During the time frame of the study, the service sector contributed between 49 and 64.90%. Its growth rate was fluctuating and negative also i.e. in 2011 (-36.11%) and positive in 2014 (61.03%). The overall trend value of registered units was found to be on the rise. The majority of businesses over the time period under consideration have been in the service sector, then manufacturing businesses. The number of registered manufacturing enterprises and service enterprises is highly correlated (0.98).

Table 3: Type of Ownership wise Registered MSMEs Enterprises (Units)

Years	*Partnership*		*Pvt.Ltd.co.*		*Proprietary*		*Others*		*Total*	
	No. of Units	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*
2011	455		702		3650		164		4971	
2012	521	14.51	781	11.25	4870	33.42	157	–4.27	6329	27.32
2013	560	7.49	742	–4.99	5348	9.82	153	–2.55	6803	7.49
2014	709	26.61	685	–7.68	8472	58.41	297	94.12	10163	49.39
2015	1110	56.56	1016	48.32	12514	47.71	548	84.51	15188	49.44
2016	1637	47.48	1333	31.20	16873	34.83	726	32.48	20569	35.43
2017	2126	29.87	1665	24.91	27014	60.10	1072	47.66	31877	54.98
2018	2338	9.97	1887	13.33	31055	14.96	1057	–1.40	36337	13.99
2019	2209	–5.52	1975	4.66	24004	–22.70	1180	11.64	29368	–19.18
2020	1996	–9.64	1753	–11.24	21865	–8.91	2553	116.36	28167	–4.09
Total	13661	177.32	12539	109.76	155665	227.64	7907	378.55	189772	214.77
% of Total	7.20%		6.61%		82.03%		4.17%		100%	
Mean	1366.1		1253.9		15566.5		790.9		18977.2	
AAGR	18%		11%		23%		38%		21.48%	
CAGR	15.94%		9.58%		19.60%		31.59%		18.94%	

Source: Directorate of MSMES, Panchkula

Table 3 showed the total number of registered micro, small, and medium-sized businesses in Haryana over the study period, broken down by the type of business (partnership, Pvt. Limited co., proprietary, and others, such as public limited company, HUF, limited liability partnership, self-housing group, cooperative society, trust, etc.). During the study period, 7.20% of units were registered as partnerships, 6.61% as private limited company enterprises, 82.03% as proprietary enterprises, and 4.17% as other types of enterprises. This is also shown by the fact that the mean value of proprietary types of businesses is higher (15566.5). The AAGR for partnerships is 18%, for private limited companies it is 11%, for sole proprietorships

it is 23%, and for all other types of businesses it is 38%. The CAGR for partnership units was 15.94%, for private limited companies it is 9.58%, for proprieties it was 22%, and for all other types of businesses it was 31.59%.

In a brief, most units were established as sole proprietorships, followed by partnerships, private limited companies, and other types.

Table 4: Social Category wise Registered MSMEs (Units)

Years	*General*		*OBC*		*SC/ST*		*Total*	
	No. of Units	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*	*No. of Units*	*AGR*
2011	4061		688		222		4971	
2012	5089	25.31	925	34.45	315	41.89	6329	27.32
2013	5334	4.81	1020	10.27	450	42.86	6803	7.49
2014	7873	47.60	1584	55.29	706	56.89	10163	49.39
2015	11432	45.21	2549	60.92	1207	70.96	15188	49.44
2016	15468	35.30	3494	37.07	1607	33.14	20569	35.43
2017	24972	61.44	4775	36.66	2130	32.55	31877	54.98
2018	25935	3.86	6396	33.95	4006	88.08	36337	13.99
2019	22656	–12.64	4585	–28.31	2127	–46.90	29368	–19.18
2020	20685	–8.70	5414	18.08	2068	–2.77	28167	–4.09
Total	143505	202.19	31430	258.38	14838	316.68	189772	214.77
% of Total	75.62%		16.56%		7.82%		100%	
Mean	14350.5		3143		1483.8		18977.2	
AAGR	20.22%		25.84%		31.67%		21.48%	
CAGR	19.83%		25.76%		28.14%		21.25%	

Source: Directorate of MSMES, Panchkula

Table 4 presents Haryana's registered MSMEs broken down by social category over the study period. During the study period, GEN made up 75.62% of all registrations, followed by OBC with 16.56% and SC/ST with 7.82%. The average of each group's units demonstrates this as well: (14350.50 for GEN), (3143 for OBC), and (1483.8 for SC/ST). When compared to the OBC (25.84%) and the GEN (20.22%), the AAGR of the SC/ST category unit (31.67%) was higher. The SC/ST category's AGR was positive and greater than its AAGR during all but the final two years of the study period. Except for 2013 (-26.31%) and 2020, the OBC category's growth was positive and above its AAGR. Between 2012 and 2014–2017, the average annual growth rate (AAGR) of GEN category units was higher than the AAGR (20.22%). A negative growth rate was seen in the latter two years of the study period. During the study period, the compound annual growth rate also followed the same pattern: SC/ST category (28.14%), then OBC category (25.76%), and finally GEN category units (19.83%).

The most prevalent category of businesses was general (GEN), then the other backward classes (OBC), and finally the scheduled castes and scheduled tribes (SC/ST), whose rate of expansion was the highest.

Table5: Employment Provided by MSMEs in Haryana

Year	*Micro*				*Small*				*Medium*				*Aggre-gate*
	Emp.	*% of Total*	*AGR*	*Yc*	*Emp.*	*% of Total*	*AGR*	*Yc*	*Emp.*	*% of Total*	*AGR*	*Yc*	
2010	29028	37.55		9834	38505	49.81		41545	9771	12.64		9320	77304
2011	23677	33.54	–22.60	21437	38293	54.25	–0.55	42332	8621	12.21	–13.34	8926	70591
2012	30482	37.17	22.32	33040	42012	51.23	8.85	43118	9513	11.60	9.38	8533	82007
2013	29545	38.98	–3.17	44643	39255	51.78	–7.02	43904	7004	9.24	–35.82	8140	75804
2014	41093	48.62	28.10	56246	35314	41.79	–11.16	44691	8105	9.59	13.58	7746	84512
2015	55070	49.13	25.38	67849	51853	46.26	31.90	45477	5165	4.61	–56.92	7353	112088
2016	73672	54.01	25.25	79452	55860	40.95	7.17	46264	6880	5.04	24.93	6960	136412
2017	115160	59.69	36.03	91055	70020	36.29	20.22	47050	7742	4.01	11.13	6566	192922
2018	118937	63.85	3.18	102658	59274	31.82	–18.13	47836	8057	4.33	3.91	6173	186268
2019	101290	64.02	–17.42	114261	50977	32.22	–16.28	48623	5937	3.75	–35.71	5780	158204
2020	128386	84.82	21.11	125864	18886	12.48	–169.92	49409	4088	2.70	–45.23	5386	151360

Source: Directorate of MSMEs, Panchkula

Table 5 displays the sum total of employment created by Haryana's registered MSMEs over the study period. During this period, micro enterprises provided employment between 33.54% and 84.82% as compare to small and medium enterprises. The annual rate of growth was both negative and unstable. In 2011, it was –22.60%, and in 2017, it was 36.03%. The trend value was showed upward trend. Small enterprises provided employment from 12.48 percent to 54.25 percent during the research period. Its annual growth rate was fluctuating and often negative. It was 31.90% in 2015 and –169.92% in 2020. The trend value also went up over time. The percentage of jobs provided by medium-sized businesses ranged from 2.70 percent to 12.64 percent. Its trend value has been falling since 2015, with annual growth rates as low as –56.92% and as high as 24.93%. In a word, over the time period of the study, micro enterprises created more jobs than did small and medium-sized businesses.

SUMMARY AND RECOMMENDATIONS

According to the data analysed above, it was discovered that the vast majority of micro, small, and medium-sized firms were registered as micro enterprises in the service sector. When compared to other categories of businesses, propriety firms had a higher proportion of owners than other kinds of businesses. In the social category of entrepreneurs, the GEN category of entrepreneurs registered greater growth rates (AAGRs) or compound annual growth rates (CAGRs) than their respective benchmark categories. This was the case more than in the OBC and SC/ST categories of entrepreneurs.

It has been suggested that in order for these businesses to achieve a good growth rate and increase their employment levels, the government should be forced to offer a variety of different kinds of assistance to them. For the purpose of finding more effective solutions for these enterprises, the government has placed all of its welfare and subsidy programmes

directly under the organisation's purview of direct monitoring. These programmes include those pertaining to the development of skills, financial help, loans to these units for technology-related issues, and testing and quality centres.

REFERENCES

[1] Agarwal, T. (2021). Economic impact of COVID19 on micro, small and medium enterprises (MSMEs) in India. *International Journal of Recent Advances in Multidisciplinary Topics*, 2(10), 89-92.

[2] Anjesh, H.L. & Rathod, G.V. (2020). Role of MSMEs in Employment Generation in Shivamogga District, 68(1), 10580-10593. https://www.research gate.net/publication/339432862.

[3] Annual Report GOI (2020-21). Ministry of Micro, Small and Medium Enterprises. Retrieved from https://msme.gov.in/sites/default/files/MSMEANNUAL-REPORT-ENGLISH%202020-21.pdf.

[4] Annual Report GOI. (2021-22). Ministry of Micro, Small, and Medium Enterprises.Retrieved from https://msme.gov.in/sites/default/files/MSMEENGLISHANNUALREPORT2021-22.Pdf.

[5] Annual Report GOI (2022-23). Ministry of Micro, Small and Medium Enterprises.

[6] Bawa., S.S., Sharma., T. & Shelly., R. (2020). Role of Micro, Small, and medium Enterprises in the Indian economy. *International Journal of Economics and Financial Issues*, 10(5), 84-91. DOI: https://doi.org/10.32479/ijefi.10459

[7] Bhargava, S. (2019). The Growth and Challenges of MSME Sector in India. S.S. *International Journal of Economy and Management*, 9(4). 26-42. http://ssirn.com

[8] Boora, A. & Dembla, N. (2019). Contribution of micro-small enterprises in Haryana, *Journal of Emerging Technologies and Innovative Research*, 6(4), 782-786. https://file:///C:/Users/91870/Downloads/JETIR190 7I99%20 (1).pdf.

[9] Das, D.K. (2021). Role of Micro, Small, and Medium Enterprises (MSMEs) in Economic Development of India. *International Journal of Multidisciplinary Research and Explorer* (*IJMRE*), 1(1), 1-7.

[10] Elayaraja, M. & Vijai, C. (2020). Status of micro, small and medium enterprises (MSMES) in India, *Asian Journal of Management and Commerce*, 1(2), 05-08. https:// file:///C:/Users/91870/Downloads/P55%20 (1).pdf

[11] Gaikwad, A. & Dhokare, S. (2020). India: A growth opportunity for MSMEs, EPRA *International Journal of Multidisciplinary Research*, 6(6), 25-30. https://eprajournals.com/IJMR/article/2769

[12] Garg, I., Yadav, A., & Bansal, S. (2019). Prime Minister Employment Generation Program: A tool to attain economic development through MSMEs in India, *Gurukul Business Review*, 15, 1-11. www.gurukulbusinessreview.in/current-and-pastissues-2/

[13] Government of India, Ministry of Micro, Small and Medium Enterprises (2015). In the Letter to Chief Secretaries of All Government of States and Union Territories on "UdyogAadhaar for MSMEs" in Government of India, Ministry of Micro, Small and Medium Enterprises.

[14] Haryana MSME Policy (2019). Haryana Govt. Gaz. (Extra.), Feb. 26, 2019. 873-875.

[15] Kavita (2020). The analysis of current status of rural entrepreneurship in Haryana. *International Journal of Business, Management and Allied Science*, 7(3), 67–76. http://www.ijbmas.in/7.3.2020/67- 76%20KAVITA.pdf.

[16] Khanna, R. & Singh, P.S. (2018). Status of MSMEs in India, *Journal of Applied Management Jidnyasa*, 10(2), 1-12. http://www.simsjam.net/index.php/Jidnyasa/article/ view/141081

[17] Khanzode, A.G., Sarma, P.R.S., Mangla, S.K., & Yuan, H. (2021). Modeling the Industry 4.0 adoption for sustainable production in Micro, Small & Medium Enterprises. *Journal of Cleaner Production*, 279, 123489.

[18] Kumar, J. (2018). Impact of financial institutions on the MSMEs Productivity: A case study of Ambala District of Haryana state. *International Journal of 360 Management Review*, 06(01), 82-93.https://www.ij360mr.com/docs/vol6/ap18 (8).pdf

[19] Mathur, A., & Rathore, R. (2019). A study on role and prospects of micro, small and medium enterprises in India, *Journal of Pharmacognosy and Phytochemistry*, 8(1). 2046-2049, https:// www.phytojournal.com/archives/2019/vol8i ssue1/PartAH/8-1-104-820.pdf

[20] Metha, R. (2022). MSME sector transforms to stimulate economic growth. *Employment News Editorial*, 4, 23.29. http://employmentnews.gov.in/newemp/MoreContentNew.aspx?n= Editorial&k=703 23

[21] Mohanty, J.J. (2018). A Study on Micro, Small and Medium Enterprises (MSMEs) in India: Status and Performance. *International Journal of Research and Scientific Innovation*, V (V), 105-114, https://www.rsisinternational.org/journals/ijrsi/digit al-library/volume-5-issue-5/105-114.pdf

[22] Negi, P. & Kaur, V.S. (2019). An overview of MSMEs sector in India with special reference to the state of Uttarakhand. *International Journal of Trend in Scientific Research and Development*, 3(2), 891-896. https://www.ijtsrd.com/papers/ijtsrd21520.pdf

[23] Nema, D.K., Suryavanshi, P., & Verma, T.L. (2021). A Study on Ever-Changing Definition of Micro, Small and Medium Enterprises (MSMEs).

[24] Nema, D., Suryavanshi, P., & Verma, T.L. (2021). An empirical study on problems and prospects of Micro, Small and Mediu Enterprises (MSMEs) in Madhya Pradesh. *Innovation: The Research Concept*, 6, 34–56.

[25] NSS 73rd Round, State wise data on MSMEs (2015-16). Retrieved from https://rbidocs.rbi.org.in/ rdocs/Publications/PDFs/1155B31BEE9AB714F289DEC6DC639CAF7C6. PDF.

[26] Potluri, R.M., & Vajjhala, N.R. (2021). Risks in Adoption and Implementation of Big Data Analytics: A Case of Indian Micro, Small, and Medium Enterprises (MSMEs). *International Journal of Risk and Contingency Management* (*IJRCM*), 10(3), 1-11.

[27] Sarmah, A., Saikia, B., & Tripathi, D. (2021). Can unemployment be answered by Micro Small and Medium Enterprises? Evidences from Assam. *Indian Growth and Development Review*.

[28] Sharma, G. (2022). Overview and Potential for New Micro, Small & Medium Enterprise(MSMEs) in Alwar (NCR), Rajasthan. 03(1), 01-04. http://sijirbe.com/wpcontent/uploads/2020/05/ICBE-2020-Ms.-Geetanjali-3-1.pdf

[29] Singh, T., Kumar, R., & Kalia, P. (2021). Emarketing Practices of Micro-, Small-and Mediumsized Enterprises: Evidence from India. In *Strategic Corporate Communication in the Digital Age*. Emerald Publishing Limited.

[30] Tripathy, S., & Bisoyi, T. (2021). Detrimental impact of COVID-19 pandemic on micro, small and medium enterprises in India. *Jharkhand Journal of Development and Management Studies*, 19(1), 8651-8660.

[31] Verma, P.M.N. & Ahmed, A. (2018). An analysis of growth and performance of MSMEs in Jammu and Kashmir. *International Journal of Advance and Innovative Research*, 5(4), 93–99. https:// file:///C:/Users/91870/ Downloads/AAAAAAAA.pdf

[32] Zanjurne, P. (2018). Growth and Future Prospects of MSME in India. *International Journal of Advanced Engineering, Management and Science*, 4(8), 608–614. https://ijaems.com/upload_ images/issue_files/5-IJAEMS-JUL-2018-9-GrowthandFuture.pdf

Impact of Single Use Plastic on Tourism Resources

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Abstract

It is a general tendency that tourists during their visit to fragile natural areas throw waste items comprised wrappers of chips, candies, chewing gums, tobacco products, plastic carry bag flows in Rivers, Lakes, Hills, Mountains, Islands, Forests etc and make the destination less attractive which reduce its appeal for visitors to visit the destination again and again,

Single-use plastic has created several problems for the environment as it is not bio-degradable. According to the United Nations estimate, every year the world uses 500 million tonnes plastic bags, half of which are used just once and approximately 3.4 million tonnes of Plastic waste is generated in India annually.

Wrappers are multi layered plastic, can't be recycled and are not bio-degradable. This kind of plastic is not even picked from the litter, blocking it in the soil and thereby hampering regeneration of plants. They inevitably find their way into our ecology through water, air and land pollution. Plastic waste reduces the quality and production of soil. The quantity of phosphorous and potassium found in soil starts decline and make the soil less fertile and when thrown in water it chokes our lakes, rivers and oceans and harms the sea life as a result negative impact on Eco-Tourism. The deteriorating environment is the result of increase in the number of tourists in natural areas. If the government cannot fix this problem, it will miss several health and related targets that India is obligated to meet under the Sustainable Development Goals by 2030.

No doubt we should advocate tourism industry to be popularized in India, but never should it be done at the cost of our natural resources. But tourism should be used to preserve these. So the main aim of research paper is to sustain our natural attractions and keep our natural resources away from the plastic waste by encouraging tourists & local residents to avoid the use of single use plastic and educating them to keep our heritage, spiritual, natural and cultural places neat and clean.

Keywords: *Natural, Plastic, Pollution, Tourism, Ecology.*

INTRODUCTION

A high quality of environment is a base for tourism development. Tourism has always been considered a major issue by the environmentalists so far as environment damage to natural sites is concerned. Natural surroundings of hills confluence of various ecosystems, forests, snow, rock and varied relief and ecological features attract naturalist, bio-scientists, academicians,

poets, sightseers, photographers etc. Tourism is also recognized as a prime industry in most parts of the world for the purpose of earning maximum foreign exchange. However, some worry that the increasing numbers of tourists in natural areas will result in numerous problems to the natural community, which would include compulsive pollution, killing of birds and animals, negative impact on air, water, plants and trees because these insensitive tourists and local people throw waste especially single use plastic such as wrappers of chips, candies, tobacco products and plastic carry bag flows in these natural places which makes the destination less attractive. So, tourism is a big contributor to the global plastic pollution crisis.

These naughty tourists are not aware about the consequences as a result negative impact on our natural resources. India is a country where indiscipline is part of the blood, it is difficult to educate the people. You keep telling people to do it, some people will, some won't. The social habits of people of throwing waste, urinating etc. in open is quite a common things. Crores of rupees have been spent by the government in the name "Swachh Bharat Mission" but people don't stop from throwing garbage. Reasons include a lack of education, disregard for public places and the absence of a hefty fine to deter people.

If the government cannot fix this problem, it will miss several health and related targets that India is obligated to meet under the Sustainable Development Goals by 2030. The 2030 Agenda for sustainable development for 2030 are what most countries in the world are working on to achieve by the end of the next decade. Disease control, biodiversity protection, cutting down on emission of harmful gases and so on. And if they are achieved, it will be a step forward in the journey toward our 2030 goals. We also advocate tourism industry to be popularized in India but never should it be done at the cost of our natural resources. But tourism should be used to preserve these.

PLASTIC IN OUR SOCIETY

In the year 1907, for the first time plastic was made from the synthetic polymer. Within 115 years of its existence this plastic has spread like a cancer in this world. Single Use Plastic, also referred to as disposable plastic used for plastic packaging and includes items intended to be used only once before they are thrown away or recycled. This single use material makes up between 36% of worlds plastic (UNEP, 2018) Plastic is usually made of petro-chemicals like oil, natural gas and coal and plays an important role in our daily life as its cost is very low. It is an important material for our economy, providing multiple benefits to modern day living. Plastic takes thousands of years to biodegrade and takes up valuable space in landfill sites, pollutes the natural environment, having a negative impact on our oceans. Plastic production is expected to become double in the next coming 20 years and almost quadruple by 2050 based on current trends. By the year 2050 there will be more plastic found in the sea comparison to fish. According to United Nations Food and Agriculture Organization, this plastic is eaten by aquatic animals. Majority of the people who depends on sea food will consumes this plastic. As of 2018, about more than 400 million tonnes of plastic is produced worldwide each year of which 36% is used for packaging, 16% for building and construction, 14% for textiles, 10% for consumers and institutional products.

The Indian Plastic Industry made a promising beginning during the 1957 with the production for polystyrene. The industry spans the country and hosts around 50,000 processing units, over 2000 exporters and employs about 4 million people across value chain. India generates 3.4 million tonnes plastic waste per year of which 2.2 million tonnes is uncollected, i.e. Single Use Plastics (Chand, 2018).

NATURE BASED TOURISM - CHANGING SCENARIO OF INDIAN TOURISM

Earlier, our tourism products for visitors were restricted only to (man-made) like monuments, temples, mosques etc. and no other activities were offered to visitors hence India received a low volume of tourist every year. In order to increase tourist traffic to India and to be a successful tourist destination apart from manmade our focus was on nature based tourism, because for some tourist, monument are bore, dead and dull. Tourist once visited the monument don't want to visit again as a result further repeat business cannot be created. Tourism industry requires variety and India is a land of diversity and it is the time when nature should be used to earn foreign exchange. If we plant Natural activities with man-made activities it will definitely make the destination 100 per cent successful and popular.

The rapid rise of both domestic and foreign visitors in recent years is due to the emerging of new trends of tourism in India and this new trend is "nature based tourism". Although cultural attractions is still the first preference for visitors to select India as a tourist destination. We also advocate tourism industry to be popularized in India but never should it be done at the cost of our natural resources. But tourism should be used to preserve these. So the main study of the research paper is to preserve our natural resources and to provide pollution free destination for tourists. If we do not take into the changing considerations of visitors, we may out of business very and soon and India will not be a favorite destination for International Tourist (Annual Report, 2022).

CURRENT SCENARIO OF INDIAN TOURISM

The Growth Pattern of Tourist in India may be Seen in the following table:

Table 1: Growth Pattern of Tourist in India

Year	*Domestic Tourist (million)*	*Foreign Tourist (million)*
2000	220.11	2.54
2005	392.04	3.92
2010	747.70	5.78
2015	1431.97	8.03
2018	1854.93	10.58
2019	2321.98	10.93
2020	610.22	2.74
2021	677.63	1.52

Source: Ministry of Tourism, Govt. of India

Table 1 reveals year wise increasing arrival of tourist to India. The international tourist arrivals in India were only 16,829 in the year 1951. Arrivals jumped to about 1.3 million or thirteen lakhs in 1990 – not including the citizens of Bangladesh and Pakistan. Visitors from Pakistan and Bangladesh were another four lakh. Tourism has now become a significant industry in India. It is an emerging employment generator, a significant source of foreign exchange for the country. India in the year 2019 received 10.93 million of foreign tourists. International tourist arrivals in India are expected to reach 30.5 million by the year 2028. (Bhandari, 2018). Due to worldwide pandemic limitations, the number of Foreign Tourist Arrivals in India during 2021 decreased to 1.52 million as compared to 2.74 million in 2020, registering a negative growth of 44.5%. Similarly in the year 2019 approximately 2321.98 million of domestic tourist visited on tourism in different states of India. India received 677.63 million domestic tourists' visits in 2021, an increase of 11.05 per cent from 610.22 million in 2020. (Indian Tourism Statistics, 2022).

Presence of Plastic in Mountain and in Hill Areas

The great increase in number of visitors to these natural sensitive areas resulted in rapid, unplanned construction of hotels and other dwellings for use of tourists and for migratory service employees. This unplanned growth threatened to destroy the environment because tourism put enormous stress on local land use and can lead to soil erosion, increased pollution, natural habitat loss and more pressure on endangered species. These effects can gradually destroy the environment resources on which tourism itself depends. (Jayapalan, 2001)

In the year 2018, clean-up of 12 Himalayan states has revealed a mountain of plastic, leaving experts alarmed at the level of pollution in the country's Himalayan eco system due to the increase of tourism activities. In Himalayan region volunteers picked up about four lakh pieces of plastic waste thrown by tourists. In this clean-up mission approximately 200 organizations joined hands to battle plastic pollution across Sikkim, Meghalaya, Tripura, Mizoram, Himachal Pradesh, Nagaland, Uttarakhand, Arunachal Pradesh, West Bengal, Jammu and Kashmir, Manipur and Assam.

More than 2.50 lakh (62.5%) waste items comprised wrappers of chips, candies, chewing gums and tobacco products. Wrappers, are classified as multi layered plastic, can't be recycled and are not bio-degradable. It causes water, air, and solid pollution. What's worse is, this kind of plastic is not even picked from the litter, blocking it in the soil and thereby hampering regeneration of plants. Plastic is harmful because plastic when thrown by tourists on land it make the soil less fertile and when thrown in water it chokes our lakes, rivers and oceans and harms the sea life. Plastic is killing marine life everywhere, starving turtle and killing whales.

The clean-up was anchored by 'Integrated Mountain Initiative' (IMI), headquartered in Delhi, in association with the 'Zero Waste Himalaya Group' in Sikkim. The campaign was carried out by 15000 people across 89 sites, also collected 36, 389 Polyethylene Terephtalate (PET) bottles and 12,869 cartons of juices, milk and other drinks which were left or thrown by the visitors. (Sharma, 2018)

Some of the hill stations also happen to be a major pilgrim centres thus attracting huge tourist traffic. Vaishno Devi, Amarnath, Kedarnath, Badrinath, Gangotri, Yamunotri etc. Various adventure sports in mountains like mountaineering, trekking, skiing etc. are practiced by the tourists. Apart from this wildlife and diversity of plant species make ideal destination for wildlife lovers. By the increasing number of tourists in hills and mountains, waste generation especially solid waste by the visitors and hotels like food, vegetables, paper, rags, clothes, wrappers of chips & candies, plastic bottles, etc., is causing major damage to the local ecosystem. Most of the hill stations lack sewage and waste disposal facilities. While some of the waste are biodegradable others like soft drink bottles, wrappers of chips, candies and tobacco, polythene are non-biodegradable and causes immense harm to the environment (IGNOU Study Material, MTM-10).

Spread of Plastic in Wetlands

Excessive tourism, affects natural resources for example, in wetlands migratory birds fly thousands of miles in winter to reach a faraway lake and then to start their back journey after three months or so. These birds visit particulars lakes because they find the environment friendly and peaceful, food supply abundant. Excessive tourism load in that area would mean increase in the plastic litter, noise pollution etc. by the tourists, leads to reduced arrival of birds. Siberian cranes, which used to migrate to Bharatpur bird sanctuary in Rajasthan have now stopped coming. Similarly Chilka Lake in Orissa has been deprived off many life forms, for a variety of reasons. All this happens because these wetlands get polluted by plastics spread by visitors, noise, dust, litter etc. by tourist. The solid waste as well as sewer water from the human habitations on the periphery of lakes finds their way inside, damaging the flora and the fauna. All the problems are enhanced by excessive tourism load on wetlands (Sharma, 2007).

Plastic in Beach

Tourist visits on beaches because of their love for sand and water. Many watersports like scuba, diving, snorkeling, deep sea diving, rafting, water surfing attract many sports lovers to these islands and beaches and spread waste of plastic cans, bottles, plastic wrappers, polythene, eatables wastes on these islands and beaches and pollutes the beach surface but also the surroundings waters. The absence of proper waste disposal mechanism, the waste either keeps lying on the beaches or is washed by the waves. Many of the leftover are non-biodegradable and thus take a very long to time to decay. They thus not only destroy the scenic beauty but also the physical landscape and marine ecosystem. (IGNOU Study Material,MTM 10) Tonnes of solid waste and littering is produced by cruise ships in the sea and rivers every year. It also negatively impacts the beauty of the shoreline and also is responsible for the death of marine animals (Roday, et al., 2009)

IMPACT OF PLASTIC

Waste disposal is a very serious problem in areas having high concentration of tourist activities and abundant natural attractions. If this waste in not disposed of properly it can have tremendous detrimental impacts on the natural environment like lakes, monuments, rivers, scenic areas and roadsides. If we do not change our consumption pattern and waste management practices by 2050, there will be around 12 million metric tonnes of plastic litter in landfills and in the environment.

Impact of Plastic on Soil and Water

It contains soil and water, chokes water ways and exacerbates natural disaster. The 2050, an estimates 99% of seabirds will have ingested plastic. China remains the largest worldwide generators of plastic packaging waste. Due to Single use Plastic China's 19% agricultural land is polluted. Australia, too, has declared that around 80,000 sites are classified as contaminated. The detrimental effects of plastic on soil are not that well explored compared to marine and water contamination, mostly because it is through land that plastic and its particles end up in water, or the plastic objects are blown away by the wind into seas, oceans and rivers. Plastic in soil is not good for plants or the animals since it obstructs their development. (Vardhan, 2018) According to the United Nations joint group of Experts on the Scientific Aspects of Marine Pollution, land based sources account for up to 80% of the world's marine pollution, 80-90% of the waste being plastic debris. Every year, an estimated eight million metric tonnes of plastic ends up in our oceans, equivalent to a full garbage truck every minute. (Chand, 2018)

Plastic bags which are thrown by the visitors/people are littered on our streets, stuck in our trees and floating in our rivers, dams and oceans and are affected by it. The littering of Plastic bag is disrupting our balanced environment more and more each day. Plastic becomes part of the blood of aquatic animals and never comes out. Our wildlife eats plastic while grazing on grass. This causes intestinal obstructions, and poisoning from the chemicals used to make the plastic. These problems often lead to a slow and painful death. Plastic debris in the sea kills an estimated 100,000 marine mammals and millions of birds and fish annually. (Vardhan, 2018)

A whole lot of carcinogenic, neurotoxic and hormone disruptive chemicals are the standard ingredients and waste products of plastic production. They inevitably find their way into our ecology through water, air and land pollution and thus affecting the eco-tourism in these regions. Garbage is a common cause of land and water pollution and the presence of improperly disposed waste at any of the tourism destination is not only aesthetically unappealing but also damage the plants and animals in that area. Plastic waste reduces the quality and production of soil. The quantity found in soil like phosphorous and potassium starts decline. Plastic is harmful because plastic is non-biodegradable. When it is thrown in land by the visitors it makes the soil less fertile. Plastic don't decompose on soil. The decomposition process happens because of the Bacteria in the soil. When we talk about food, the bacteria's have enough energy to break the food into pieces. But in plastic, bacteria don't have enough energy to break the bonds of plastic (Sharma, 2018).

Impact on Economy and Health

It causes economic loss in tourism, fishing and shipping industries. Plastics impact fisheries through dumped catch, fouling incidents, net repairs and time lost cleaning nets; while ghost fishing can generate additional revenue losses. Tourism can be impacted when tourists are no longer willing to visit, due to plastic litter on beaches. It blocks sewage system and provide breeding grounds for mosquitoes, raising the risk of malaria transmission. It releases toxic chemicals and emission if burned. Chances of food contamination will be more.

RESEARCH METHODOLOGY

The primary data for this work was gathered from primary and secondary sources. The questionnaires were given to domestic and foreign tourists, who visited Delhi for sightseeing in the month of December, 2022. The research involved 240 respondents altogether, using random sampling. The survey consisted of 'two opinion statements' identified to gauge the overall perception of the tourists, regarding level of cleanliness in various tourist places. Secondary Data was collected through the help of electronic and print media.

FINDINGS

The primary aim of the research paper is to preserve natural resources and to project India as a clean tourism destination among visitors, so that India can become a popular brand among International Tourists.

Table 2: Foreign and Domestic Respondents

S. No.	*Question*	*Foreigners*		*Domestic*	
		No.	*%*	*No.*	*%*
1.	Is this your first visit in India?				
	Yes	84	70	72	60
	No	36	30	48	40
	Total	120	100	120	100
2.	Are you satisfied with the conditions of Eco destinations within India?				
	Yes	42	35	48	40
	No	78	65	72	60
	Total	120	100	120	100
3.	Are you satisfied with Cleanliness in tourist spots?				
	Yes	41	34.16	44	36.66
	No	79	65.83	76	63.33
	Total	120	100	120	100
4.	Will you like to visit again at various tourist places of India?				
	Yes	46	38.33	53	44
	No	74	61.66	67	56
	Total	120	100	120	100

RESULTS AND DISCUSSIONS

From Table 2, majority of the foreigners, i.e. 70 per cent and 60 per cent of the domestic respondents were having first experience to visit India for tourism activities and less number of respondents i.e. 30 per cent of the foreign and 40 per cent of the domestic respondents admitted that they had earlier visited India.

The Table 2 reveals that 65 per cent of the foreign tourists and 60 per cent of the domestic tourists were not satisfied with the condition of Eco destination within India because of increased pollution by the tourists, hoteliers and transporters. Lot of waste is generated by these insensitive tourists as they throw waste items like cans, bottles, plastic wrappers, polythene, eatables wastes are common in hills, mountain, island, beaches etc. and it is not easy to dispose waste. The absence of proper waste disposal mechanism, the waste either keeps lying on the beaches, hill, mountains etc. Many of the leftover are non-biodegradable and thus take a very long to time to decay. They thus not only destroy the scenic beauty but also the physical landscape and marine ecosystem. Similarly, noise created by transport associated with tourism, adds to the distress of animals living in protected areas. Various modes of transportation increase pollution of air and water, cause of climate change. It is indeed ironical that these undesirable effects of tourism tend to deplete the environmental resources and richness, on which tourism thrives. The great increase in number of visitors, unplanned construction of hotels and other dwellings for use of tourists and for migratory service employees destroy the environment because tourism put enormous stress on local land use. These effects can gradually destroy the environment resources on which tourism itself depends. The overuse of water resources by tourism industry in hotels, resorts, swimming pools, water parks, etc. pose a greater pressure on available water resources. For tourists, India always is a great tourist destination for its historical and cultural importance. Visitors are now also curious to explore the wonders and varieties of earth and want to visit natural beauty spots of flora and faunas. A destination having healthy environment like clean air, clean water, and clean earth always attract and inspires traveler to visit at that destination because visitors won't full value of their money and won't compromise with their health while on tours. More over good environment conditions enhances the experience of visitors. Only 35 per cent of the foreign and 40 per cent of the domestic respondents was satisfied by the Eco- destinations of India

Majority of the foreign tourists, i.e. 65.83 per cent and 63.33 per cent of the domestic tourists were not satisfied with the level of cleanliness and they feel that India is trailing behind in the cleanliness and hygiene at various tourist places of India, urinating, bathing in public, spitting, littering, throwing household garbage on roads are common things in India. So enough number of public toilets, road side dustbins and bathrooms should be constructed by the government. In case of any violation, fines should be imposed on those people who do such things in order to keep the city neat, clean and green. Cleanliness in tourist destination was not up to the standard, which creates a very bad impression. The standard of the cleanliness needs to be maintained and it is the responsibility of the civic agencies because cleanliness

and hygiene of the destination is the biggest criteria by which a visitor decides to go on tourism. Only less number of foreign respondents, i.e. 34.16 per cent and 36.66 per cent of the domestic respondents were satisfied with the cleanliness.

India is trailing behind in the cleanliness, increase of pollutions because of this 61.66 per cent of the foreign tourists and 56 per cent of the domestic tourists are not interested to come India again for tourism, only 38.33 per cent of the foreign tourists and 44 per cent of the domestic tourists have shown interest to visit India again for tourism activities.

GOVERNMENT INITIATIVES TO COMBAT PLASTIC WASTE POLLUTION

Waste disposal is a very serious problem in areas having high concentration of tourist activities and abundant natural attractions. The battle against plastic pollution is a never-ending one since we are constantly producing harmful material. With a little change in our daily lifestyle, one can definitely help to protect the entire planet by maintaining a healthy ecosystem. (Vardhan, 2018) Some of the suitable remedial measures are given below:

- **Promotion of Sustainable/Responsible Tourism:** The Ministry of Tourism has evolved Comprehensive Sustainable Tourism Criteria (STCI) for major segments of the tourism industry, namely accommodation, tour operators, Beaches, Backwaters, Lakes and River sectors applicable for the entire country. The Criteria have been evolved after consultations with the various stakeholders. The Ministry entered into a Memorandum of Understanding (MoU) with the Eco Tourism Society of India (ESOI) on 15th March, 2016 to inform and educate tourism stakeholders about the importance of Sustainable and Responsible Tourism practices and ensuring to promote Sustainable and Responsible practices in the tourism industry. The target group includes hoteliers, tour operators, individuals from transport industry, resort managers, tourist guides, community representatives and government departments (culture, forest, environment, Archaeological Survey of India (ASI), museums, district officials) etc. A total of 5 such Workshops at Jaipur, Goa, Guwahati, Bhopal and Ahmedabad have been held so far to overcome the problem of platic pollution.
- **Swachhta hi Seva (ShS):** In order to make plastic free tourist destination, ministry of Tourism had organized Swachhta Hi Seva (SHS) during 11th September 2019 to 27th October 2019 with the theme "Eradication of Single Use Plastic (SUP)" by organizing Major clean-up activities, pledge taking, awareness activities, Nukkad Natak, etc. The programmes were also organized at various tourist/pilgrim places through its India tourism offices at about 517 places all over the country with the active participation of educational institutions under Ministry of Tourism.
- **Swachhta Action Plan (SAP):** "Swachhta" is considered as one of the pillars of tourism, as a clean tourist place is more sustainable in the longer run, which attracts tourism as well as investment. This also results in good health and a sense of pride amongst the local residents and a feeling of satisfaction amongst the tourists. Considering the importance of cleanliness & hygiene, ministry of tourism has implemented the Swachhta Action Plan

(SAP) activities through Indian Institute of Tourism and Travel Management (IITTM), Gwalior in 34 States/UTs to create awareness among tourists, school/college students and stake-holders at tourist centres. The awareness activity covered 1000 tourists, 500 students and 60 stake-holders at each site involving activities of awareness on cleanliness amongst tourists, school/college students, and stake-holders of tourist centres, pilgrimage centres & famous archaeological monuments. These activities were implemented at 180 sites/places in various States/UTs during the year 2019-20.

For the development of eco-tourism, financial assistance is being provided to state government. The scheme is for setting up of eco-tourism centres, eco-tourist lodges, resorts, camp sites development with tourist facilities, eco-camps, tented resorts and other connected activities in each state in partnership with state forest department, state tourist department and hotel chains. To promote eco-tourism, the centres will be developed around pristine natural environs with good bio diversity, preferably near to Wildlife sanctuaries/national parks/river delta areas/mountains, etc. (Annual Report, 2023)

To reduce plastic pollution, people should practice waste segregation at household level in three separate bins, such as biodegradable and non-biodegradable waste should be put in separate bins and no waste should be littered or thrown in drains. We can make compost for utilizing waste and conserving environment. (Gupta, 2019)

Sustainable packaging, nowadays there are materials which can be recycled easily, or they disintegrate more quickly than plastic. Consumers should prioritise products available in sustainable packaging while shopping. Raising awareness about the detrimental effects of plastic waste is perhaps one of the biggest things we can do, taking your own bag to carry the groceries is a huge deal when done consistently. We have to avoid single use disposable plastic, carry a reusable bag (cloth bag) when shopping. In addition, the government should certainly encourage green practices by supporting environmentally friendly behaviour and introducing stricter penalties for offences against nature. (Pillai, 2019)

In order to reduce the number of visitors during peak seasons at the tourist destination, quota system is followed so that carrying capacity at the destination can be controlled. This helps to protect the environment, soil, air and water from the insensitive tourists. Secondly, use of price mechanism is used to reduce the number of tourist, high prices may be charged during the peak season by hoteliers, transporters, parking's etc. in order to discourage visitors to visit at the busy destination. The quantitative and qualitative aspects of tourism should be addressed sincerely. Controlling the number of tourists visiting a place could be a good starting point. Khajjar in Himachal Pradesh, the mini Switzerland of India is one good example in this regard. The formation of tourists boards on the lines of Vaishno Devi Management or Amarnath shrine board could possible regulates the tourist traffic. Apart from this site management signposting provides visitors with information about do's and don'ts in order to preserve the natural area and by the creation of signposted walks, so that tourists may be kept away from sensitive areas. (IGNOU Study Material, MTM 10).

In Delhi to 'Beat Plastic Pollution', National Government Organizations, private companies and pollution controlling agencies have organized a flurry of activities to beat the plastic menace. Plastic Waste Management Rules came into effect, in March 2016, had introduced several new features such as banning plastics less than 50 microns in size and phasing out multi-layered plastics, almost 25 states and Union Territories have banned plastic, but it will take some time to ban the plastic in the entire country. It is the responsibility of companies to take back plastics and multi-layered packaging that they introduce. For the same, incentives can be provided to consumers to return used plastic such as polyethylene terephthalate (PET), sachets and packaging, among others. Also, use of products such as disposable spoons, cups, plates and straw should be banned as they are a major menace. (Thakur, 2018)

The first garbage café/bank was opened at Chhattisgarh and now to reduce plastic pollution, Delhi administration is trying Delhi to make it a plastic-free city. South Delhi Municipal Corporation (SDMC) opened a first Garbage café/bank in the city. Located at the City Centre mall in Dwarka Sector 21, one can exchange plastic waste for free food at the shop. After depositing the plastic waste at a counter, customers are given coupons that can be used at any counter at the food court. Looking at the success of the concept, South Delhi Municipal Corporation (SDMC) is converting popular eating joint into garbage cafes in areas such as Lajpat Nagar, Defence Colony, Moolchand, New Friends Colony and Sunder Nagar Market. People rush to confectionary shops to buy samosa, kachoris and cold drinks. But instead of paying cash or with a credit card, people hand over a bag of old plastic bottles at the shops counter. This concept is also popular in Europe, the USA and in Cambodia, allows customers to pay for their food and drinks with plastic waste. The idea is to incentivize garbage collection and control the use of single use plastic. The plastic collected by eateries is deposited with a municipal agency, which recycles and reuses it. On the lines of Chhattisgarh and Delhi administration, this process should be adopted in rest of India in order to reduce plastic pollution

Similarly, to reduce plastic pollution North Delhi Municipal Corporation (NDMC) has been experimenting with the concept of "Bhartan Bhandar" to encourage religious groups in the area to make a bank of steel crockery that can be taken while organizing community lunches during festivals and religious functions. Abundance of plastic waste is generated by religious congregations wherein people organize lunches for devotees and serve food in cutlery made of plastic or Styrofoam. NDMC has set up a bank of 250 steel plates, glasses, spoons and bowls that can be loaned for religious functions. The bartan bhandar, concept is to dissuade people using single use plastic in any form. To reduce the plastic pollution bhartan bhandar, have been opened at 20 places in Delhi. Here the organizers can borrow steel utensils free of cost. They have to return them when the event is over. It is much more economical then to purchase new plastic cutlery every time plus it helps to reduce plastic waste. Besides this, the NDMC has also set up kiosks at different locations such as Connaught Place and Khan Market among other places where people can get clothes bags in exchange for plastic bags. During shopping, cloth bags are extremely useful. Tourists drinks soda and water from

plastic bottles and just throw them away. If we just deposit them at the New Delhi Municipal Corporation counter instead, we get cloth bags, which can be used for future grocery shopping (Pilli, 2020).

CONCLUSION

India has registered economic growth in the last few years. But it still faces a huge economic loss due to poor hygiene and sanitation. Inadequate sanitation poses serious issues for economic growth of the country by manifesting itself in the form of poor health, death, losses in education and overall productivity and well-being of its people. According to the World Bank, India loses 6.4 per cent of GDP annually because of this particular reason. Perceiving this government of India launched "Swachh Bharat Mission" on 15th August to build a clean India. The environment resources attract tourists because of their outstanding beauty, recreational possibilities or educational and cultural interest. The quality aspect of tourism is equally important.

The only solution is creating awareness and sensitization of the tourists to local ecology could be useful to preserve these resources. There are so many dustbins in various places of tourist destinations but people prefer to throw waste on the roads. It is not the question of having lots of public bins. We need to create citizen pressure and stop people from littering on the roads.

Any destination having abundance of green lawns, countless trees, countless plants, countless flowers, countless birds makes a destination attractive and inspires travelers to visit these places because countless plants, trees, flowers and birds is the beauty of tourism. In order to keep cities clean, the management of Solid Waste must be improved through various measures like construction of dustbins, development of new sanitary land-fill sites, constructions of toilets and urinals etc.

In India Plastic Waste Management Rules came into effect, in March 2016, had introduced several new features such as banning plastics less than 50 microns in size and phasing out multi-layered plastics, almost 25 states and Union Territories have banned plastic, but it will take some time to ban the plastic in the entire country. From the last decade, government of India has taken several steps to reduce the level of pollution and waste but government efforts are not enough, participation of people is equally necessary in order to reduce pollution and waste. So that India becomes one of the hottest global brand and a "Swachh Tourist Destination" for international travelers.

REFERENCES

[1] Annual Report (2019), Ministry of Tourism, Govt. of India.

[2] Chand, S. (2018), '2050 Tak Samundra Mein Fish se Jayada Hoga Plastic' in *Amar Ujala*, New Delhi, 22 April, p. 18.

[3] Gupta, M. (2019), 'Dispose plastic waste' in *Hindustan Times*, New Delhi, 05 June, p. 11.

[4] IGNOU Study Material, MTM-10', *Tourism Impact*, pp. 144–145.

[5] IGNOU Study Material, MTM-10', *Tourism Impact*, pp. 132–135.

[6] IGNOU Study Material, MTM-10', *Tourism Impact*, p. 152.

[7] Jayaplan, N. (2001), An Introduction to Tourism, Atlantic Publisher and Distributors, New Delhi, pp. 107–113.

[8] Ministry of Tourism (2022), Indian Tourism Statistics: Research Marketing Division, New Delhi,

[9] Pillai, S. (2019) 'Much to learn from other cities about tackling waste'. *Hindustan Times*, New Delhi, 29 December, p.06.

[10] Pillai, Soumya & Mishra, Ashish (2020), Paying with plastic for a clean Delhi, *Hindustan Times*, New Delhi, 05 Jan, p. 05.

[11] Roday, S., Biwal, A., & Joshi, V. (2009), Tourism Operations and Management, Oxford University Press, New Delhi, p. 17.

[12] Sharma, S.P. (2007), Tourism and Environment Concept, Principles and Approaches, Kanishka Publishers Distributors, New Delhi, pp. 317–321.

[13] Sharma, N. (2018) 'Mountains of plastic choke 12 states: Land, water put under threat' in *Hindustan Times*, New Delhi, 05 June, p. 15.

[14] Thakur, J. (2018) 'Plastic waste rules remain on paper' in *Hindustan Times*, New Delhi, 05 June, p. 04.

[15] United Nations Environment Program (2018), Single use plastic: A Roadmap for sustainability, http://wedcos.unep.org/bitstream/handle/20500./1822/25496/Single use plastic sustainability, accessed on 7 May 2023, p. 14.

[16] Vardhan, H. (2018) 'Why India is taking the lead for a clean planet' in *Hindustan Times*, New Delhi, 05 June, p. 14.

[17] https://www.facebook.com/Fastestfastsikkim/posts/delhis-first-garbage-cafe-opens-in-dwarka-get-food-in-exchange-for-plastic-waste/1284653261721023/, visited 29 June 2023.

Analysis of Green Energy Sources in India

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Abstract

For sustainable development and economic growth, focus of the Government of India is towards de-carbonization of Indian Power Sector and shifting from the fossil fuels based Energy to the Renewable Sources Energy, which is cleaner, safer, environment friendly and more sustainable. Government of India has been revised a target of achieving 175 GW of Renewable Energy (RE) installed capacity by 2022 to 450 GW by 2030. Further, India has announced in CoP 26 summit at Glasgow to achieve 500 GW non-fossil energy capacity by 2030, to meet 50% of its energy requirements from renewable energy by to reduce the carbon intensity of its economy by less than 45% by 2030 and to achieve the target of Net Zero by 2070. Ministry of Power have been declared the hydro power plants having a capacity above 25 MW as a source of renewable energy. However, increasing penetration of solar and wind power renewable sources having inherent variability and intermittency nature is expected to pose challenges of grid stability and security and many steps have been taken by Government to address these challenges.

Keywords: *Renewable sources, Power Generation, Components of Renewable Energy Sources (RES), Contribution of RES.*

INTRODUCTION

Understanding growth of renewable energy in India, and fast-growing sectors such as Solar Energy, Wind Energy, Bagasse, Bioenergy, and Green Hydrogen. India is the fourth highest contributor to renewable energy globally. The Indian government has approved 45 solar parks with an aggregate capacity of 37 GW. There have also been similar initiatives introduced for the wind energy sector. The 2023 Union Budget has emphasised green hydrogen as well as setting-up supply chains for biomass for biofuel production. Thriving market conditions including more private sector investments, strong policy action, and technological improvements focused on creating resilient supply chains are responsible for these positive trends in the sector. With these strong tailwinds, it is estimated that the renewable energy sector would house 3.4 million jobs by 2030. While the renewable energy sector comprises, energy produced from various sectors such as, solar energy, wind energy, bioenergy, hydro-energy, and tidal energy, this report prioritises and details the trends in solar energy, wind energy, and bioenergy (biofuels) as these sectors have shown the most activity and increase in

installed capacity. In addition, the report focuses on green hydrogen given the recent emphasis on the same in the 2023 Union Budget.

REVIEW OF LITERATURE

Review of literature is the most important aspect of the research work. It helps in understanding the past research work carried out regarding the topic and will give the base for formulation and analysis of research problem. It also help to know the scope, limitations of the past research and gives an idea about the aspects not covered by past researchers.

Sharma & Choubey, (2021) examined that handling the environmental concern and strengthening environmental issues can improve if green banking initiatives can be handled more efficiently.

Sushma, B.S. (2021) examined that sustainable development is the need of the day. Green financing being an effective tool of sustainability is gaining more importance in the present scenario. India being a developing country should concentrate on renewable energy generation, protecting natural resources, efficient energy management, climate adoption, and other ecological issues with the help of green financing. Thus, it can be concluded that green finance if properly managed will work as an effective tool for sustainable development.

Kumar & Prakash (2020) concluded that to enable the public sector banks to adopt best sustainable practices, adequate code of conduct at the global level need to be drawn into the Indian banking industry.

Jha & Bakhshi (2019) concluded that major hindrance in green finance is its high cost of capital, hence a new process of blended finance needs to be developed to reduce the cost of capital of private investors.

Jeffrey D. Saches et al. (2019) concluded in his study that the investment in renewable and energy efficiency has been declining which would threaten the expansion of green energy. Les investment in renewable energy create hurdle to achieve the sustainable development goals. Green Financing needs to be accelerated which covers green investments, green banking, green projects, etc.

Sharif Mohd et al. (2018) found that the role played by Green Finance as a solution to bring harmony between the environment and the economy and also discussed the various Green financial instruments available and the sustainability initiatives in India.

Dipika (2015) discussed the tendency that business organizations and the stakeholders are giving more emphasis to environmental protection and sustainable development. The researcher concluded that green banking helps in improving economic growth and protects the environment.

Keerthi, B.S. (2013) concluded that India's energy supply is not able to keep pace with the high economic growth rates in the country. To minimize import dependency in the conventional energy sector, the Indian Government is increasingly focusing on strategies for enhancing energy efficiency and utilizing renewable sources. The main emphasis is on MSMEs, because of their great importance for the Indian economy. Financial institutions &

Banks should provide loan at cheapest rate to those who are willing to establish renewable energy projects.

Tasnim Uddin Chowdhury et al. (2013) discussed the role of green finance in the economic development and sustainability and explained financing in renewable energy, agriculture, green banking, green building, etc.

OBJECTIVES OF THE STUDY

- To judge trend and contribution of non-renewable energy source (non-RES) and renewable energy source (RES) in aggregate power generation.
- To know which components of renewable energy source is dominating.

DATA COLLECTION

The research paper is analytical in nature. The data is secondary and collected from annual report of CEA, Ministry of Power of India and Renewable Project Monitoring Division of MoP.

RESEARCH METHODOLOGY

Various tools and techniques were applied on absolute data such as trend, percentage, rank etc. Mainly five components of renewable energy source were identified namely – wind, solar, bagasse, small hydro and biomass. For all India level, all the states were distributed among the following five regions:

- **Northern Region:** Chandigarh, Delhi, Haryana, Himachal Pradesh, J&K, Ladakh, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand.
- **Western Region:** Chhattisgarh, Gujarat, Madhya Pradesh, Maharashtra, Dadra Nagar Haveli and Daman & Diu, Goa
- **Southern Region:** Andhra Pradesh, Telangana, Karnataka, Kerala, Tamil Nadu, Lakshadweep, Puducherry
- **Eastern Region:** Andaman Nicobar, Bihar, Jharkhand, Orissa, Sikkim, West Bengal
- **North Eastern Region:** Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura

RESULT AND ANALYSIS

Table 1 exhibits generation of total energy by Non-Renewable and Renewable Energy Sources from 2014-15 to 2021-21 in absolute terms as well as in relative terms. Share of Non - RES in total energy generation was above 90 percent except last two years of the study period where it was below. In absolute terms trend value presents an increasing trend while in case of yearly growth rate it present decreasing trend and even negative also in the year 2020-21 (covid -19 pandemic). Contribution of Renewable energy sources in total energy generation was only in

Table 1: Generation of Energy from Non-Renewable Energy Sources (RES) and Renewable Energy Sources from 2014–15 to 2021–22

(Million Units)

Years	*Non RES Generation*			*RES Generation*			*Total Generation*	
	(MU)	*Share in Total*	*Yearly Growth*	*(MU)*	*Share in Total*	*Yearly Growth*	*(MU)*	*Yearly Growth*
2014-15	1048673	94.44		61719	5.56		1110392	
2015-16	1107822	94.39	5.64	65781	5.61	0.84	1173603	5.69
2016-17	1160141	93.43	4.72	81548	6.57	17.17	1241689	5.80
2017-18	1206306	92.21	3.98	101839	7.78	18.54	1308146	5.35
2018-19	1249340	90.79	3.57	126760	9.21	18.32	1376100	5.19
2019-20	1250784	90.04	0.12	138337	9.96	8.11	1389121	0.95
2020-21	1234608	89.34	-1.29	147248	10.66	7.00	1381855	–0.52
2021-22	1320947	88.54	6.99	170912	11.46	7.51	1491859	7.96

Source: Author's calculation on the basis of Annual Reports of CEA.

single digit except the year 2021-22 and 2022-23 where it was 10.66 and 11.46 respectively. Trend values in absolute terms as well as in relative terms presents an increasing trend. Its yearly growth rate was highest in 2017-18, i.e. 18.54 but it declining onward. Here, it should be noted that yearly growth rate was positive in the year of Covid-19 pandemic. India's total energy generation increasing year to year except the year 2020-21. So, it can be inferred that share of renewable energy source is increasing in total energy generation.

Table 2: All India Renewable Energy Generation in 2021-22 & 2022-23: Component-wise

(Million Units)

Category	*RE Generation 2021-22*		*RE Generation 2022- 23*		*% Increase/ Decrease Over the Year 2021–22*
	(MU)	*Share in Total*	*(MU)*	*Share in Total*	
Wind	68640	40.16	71814	35.28	4.62
Solar	73484	43.00	102014	50.12	38.83
Biomass	3483	2.04	3161	1.55	–9.23
Bagasse	12574	7.36	12863	6.32	2.3
Small Hydro	10464	6.12	11170	5.49	6.75
Others (waste to energy, etc.)	2268	1.33	2529	1.24	11.51
Total	170912	100	203552	100	19.1

Source: Annual Reports of CEA

Note: Solar Installed capacity including 1.8 GW rooftop solar as on 31.03.2023.

Table 2 presents generation of renewable energy during the year 2021-22 and 2022-23 component-wise. In 2021-22 contribution of solar energy in generation of total renewable energy was 43% followed by wind (40.16%); bagasse (7.36%); Small Hydro (6.12%) and biomass (2.04%). In 2022-23 share of solar energy was 50% followed by wind (35.28%);

bagasse (6.32%) small hydro (5.49%) and biomass (1.55%). Except biomass all other components of renewable energy showed increasing generation of energy in 2022-23 over 2021-22. Here, it should be noted that among various components of renewal energy sources, Solar is dominating followed by Wind; Bagasse ; Small -Hydro and Biomass. It is presented by the following chart:

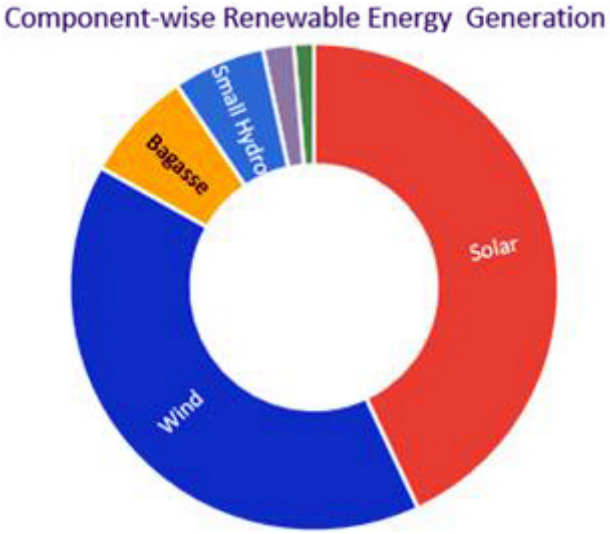


Table 3: Contribution of Components of RE in Total RE during the Year 2021-22 and 2022-23: Region-wise

Components	*2021-22*	*2022-23*	*Increase/ Decrease*	*2021-22*	*2022-23*	*Increase/ Decrease*
	Northern Region			*Western Region*		
Wind	16.82	10.43	-6.39	58.28	54.7	-3.58
Solar	58.93	71.91	12.98	28.86	34.02	5.16
Biomass	3.14	2.25	-0.89	3.31	2.6	-0.71
Bagasse	9.61	6.57	-3.04	9.11	8.32	-0.79
Small Hydro	10.79	8.14	-2.65	0.37	0.28	-0.09
Others	0.72	0.71	-0.01	0.07	0.08	0.01
Total RE	100	100		100	100	
	Southern Region			*Eastern Region*		
Wind	42.49	41.89	-0.6	0	0	0
Solar	45.55	47.41	1.86	27.91	29.76	1.85
Biomass	0.66	0.37	-0.29	3.15	1.74	-1.41
Bagasse	5.46	5.06	-0.4	2.03	3.04	1.01
Small Hydro	5.38	4.74	-0.64	17.74	19.04	1.3
Others	0.47	0.53	0.06	49.17	46.43	-2.74
Total RE	100	100		100	100	

Components	*2021-22*	*2022-23*	*Increase/ Decrease*
	North Eastern Region		
Wind	0	0	0
Solar	35.81	45.41	9.6
Biomass	0	0	0
Bagasse	0	0	0
Small Hydro	64.19	54.48	-9.71
Others	0	0.12	0.12
Total RE	100	100	

Source: Author's calculation on the basis of data available on web site of CEA.

Table 3 shows region-wise contribution of various components of renewable energy during the year 2021-22 and 2022-23. In northern region solar is dominating followed by wind; small hydro; bagasse; biomass and others. It should be noted that solar energy increased by 12.98% over 2021-22 in the year 2022-23 but all other components generation decrease in the same period in this region. In western region wind energy dominating followed by solar; bagasse; biomass; small hydro and others. In this region solar energy increase by 5.16% and others only 0.01% during 2022-23 over 2021-22 while rest components generation decline. Solar energy generation is on top followed by wind; bagasse; small hydro; biomass and others in southern region. Solar and other component energy increased by 1.86 and 0.06% in the year 2022-23. Rest components generation decline in the same period in this region. In eastern region others are dominating followed by solar; small hydro; biomass and bagasse. In 2022-23 generation of solar, bagasse and small hydro energy increased by 1.85; 1.01 and 1.3% respectively while biomass and others decrease by 1.41 and 2.74% respectively. Here, it should be noted that wind energy contribution was zero in this region. In north eastern region small hydro component was on top and followed by only solar. In this region other components of Renewable Energy were disappeared from the screen. In 2022-23 solar energy increased by 9.6% while small hydro decreased by 9.71% in this region. So, it can be concluded that solar energy was on 1st rank in all the regions except western region and wind energy was on 1st position in this region, but in rest region it was on 2nd position. Position of other components changed from region to region. In north eastern region only solar and small hydro components were functioning.

CONCLUSION

Contribution of non-renewable energy sources was more than 90% and trend also increasing but its contribution was declining while trend values and contribution of renewable energy sources was increasing with and it increased from 5.56% in 2014-15 to 11.46% in 2022-23 in aggregate power generation in country. Out of five components of renewable energy sources solar is dominating followed by wind; small hydro; bagasse and biomass. Its power generation increased by 38% in 2022-23 comparison to 2021-22. In all the five regions of the

country; source of solar energy is actively participating in aggregate power generation and except western region this source is on 1st rank. In western region source of wind energy was on top followed by solar. In eastern region source of wind energy disappeared from the screen but remaining four components are active in this region. In north eastern region only source of solar and small hydro are active and remaining components disappear in this region.

REFERENCES

[1] B.S. Sushma (2021) , "Green Finance"-An Effective Tool to Sustainability, *International Journal of Creative Research Thoughts* (*IJCRT*), Volume 9, Issue 1 January 2021 | ISSN: 2320-2882 Pp. 4256-4263.

[2] Chowdhary, T.U., Datta, R., & Mohajan, H.K. (2013). Green Finance is Essential for Economic Development and Sustainability. *International Journal of Research in Commerce, Economics & Management*, 3(10), 104–108.

[3] Dikau, S., & U. Volz (2018). Central Banking, Climate Change and Green Finance. ADBI Working Paper 867. Tokyo: Asian Development Bank Institute.

[4] Dipika (2015). Green Banking in India: A Study of Various Strategies Adopted by Banks for Sustainable Development. *International Journal of Engineering Research & Technology* (*IJERT*).

[5] Jha, B., & Bakhshi, P. (2019). Green Finance: Fostering Sustainable Development in India. *International Journal of Recent Technology and Engineering*, 8(4), 3798–3801.

[6] Keerthi, B.S. (2013). A Study on Emerging Green Finance in India: Its challenges and Opportunities. *International Journal of Management and Social Sciences Research* (*IJMSSR*), 2(2), 49-53.

[7] Rout and Sahoo (2021), Green Finance: The Future of Sustainable Banking in India, *Inter-science Management Review* (*IMR*), ISSN: 2231-1513, Vol. 5, Issue 1, 28–36.

[8] Sinha, J., Jain, S., Padmanabhi, R., & Acharya, M. (2020). Landscape of Green Finance in India. September.

[9] Sharma, M., & Choubey, A. (2021). Green banking initiatives: A qualitative study on Indian banking sector. *Environment, Development and Sustainability*.

[10] Wang, K., Tsai, S.-B., Du, X., & Bi, D. (2019). Internet Finance, Green Finance, and Sustainability. *Sustainability*, 11(14).

SECTION 5

SUSTAINABLE BUSINESSES: ADOPTION OF TECHNOLOGY

Combining Active Vibration Control and Energy Harvesting

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Abstract

Energy harvesting allows existing ambient energy to be harnessed for use or storage. Electromechanical processes can sometimes be adapted for energy harvesting when designers see the potential and the system configuration allows it to be used. Inertial active vibration control uses an electromagnetic actuator to affect a counteracting force to an existing vibration. The possibility exists in applications of inertial active vibration control to use the motion of the actuator – which is being used for control – to simultaneously provide a power source for self-powering, battery charging, or other purposes.

INTRODUCTION

Energy harvesting is the act of capturing ambient energy that exists in a process and either using it immediately or placing it in storage. Examples of ambient energy include kinetic, thermal, RF, and magnetic. Solar, hydro, and wind power can also be considered energy harvesting – although these fields are mature for energy generation. Energy harvesting oŌen describes smaller processes and applications such as the self-powering of IoT devices. Using the bending of a shoe sole to power decorative LEDs on the shoe is such an example.

While it is difficult to separate the mature markets from the emerging, the global energy harvesting system market size was valued at 468 million in 2021 and is projected to reach USD 701 million by 2026 [Markets and Markets 2021]. No matter the distinction, the growth described is indicative of our world's continued interest in energy conservation and clean sourcing.

Active vibration control is a seemingly unrelated market. Active vibration control is the act of imparting a vibration on a system to destructively interfere with unwanted energy that is present [Landau 2017]. An example of active vibration control is a system mounted under an automobile seat that causes the engine vibrations to no longer be felt by the driver. Active vibration control systems were introduced into consumer and commercial vehicles many years ago.

Active vibration control is oŌen accomplished using an inertial actuator. An inertial actuator is a device that allows an internal mass to be moved in response to an electrical

signal. The movement of the mass due to the electrical signal imparts a reaction force at the attachment point of the actuator.

A simple inertial actuator can be constructed by filling a speaker cone with weights and then sealing the weights to the cone. Such a design is shown in Figure 1. The speaker – which is capable of broadband motion in response to a driving voltage – now imparts a reaction force due to the cone (mass) movement. While such a system may not be commercially viable, it is excellent for understanding the inertial actuation and energy harvesting processes.

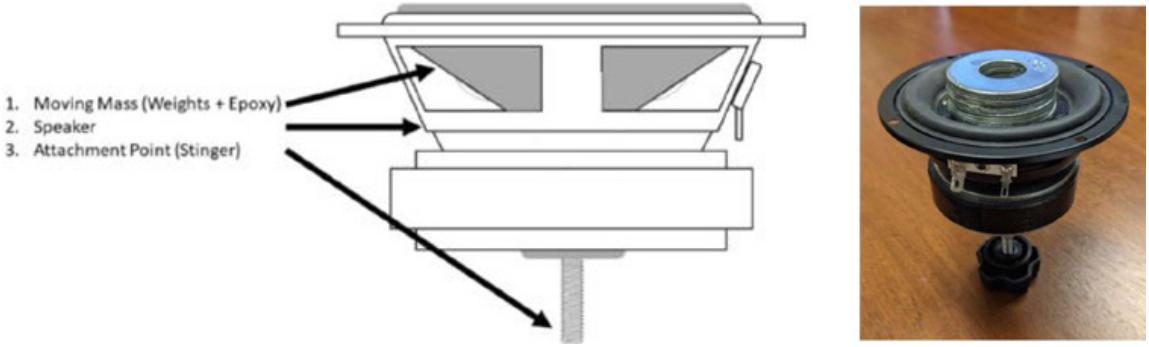


Figure 1: Speaker-based Moving-mass Inertial Actuator – Depiction and Actual Construction

APPROACH

The inertial actuator design as shown uses a moving cone (mass) to impart the reaction force. The device's coil is the driving input for the movement. This is a reversible process. While the AVC system is a process whereby the coil is the input and the mass movement is the output, any other movement by the mass in response to the movement of the frame generates a voltage in response. This back EMF can be harvested while the control process is underway.

Care must be taken to not interfere with the driving voltage present. A band stop filter spanning the control band could be used. Additionally, the control could be attected across a wide band of the actuator while the harvesting is concentrated at the resonance – where the rapid phase change makes control problematic. Figure 2 shows a representative inertial actuator force vs frequency curve where the resonance is pronounced.

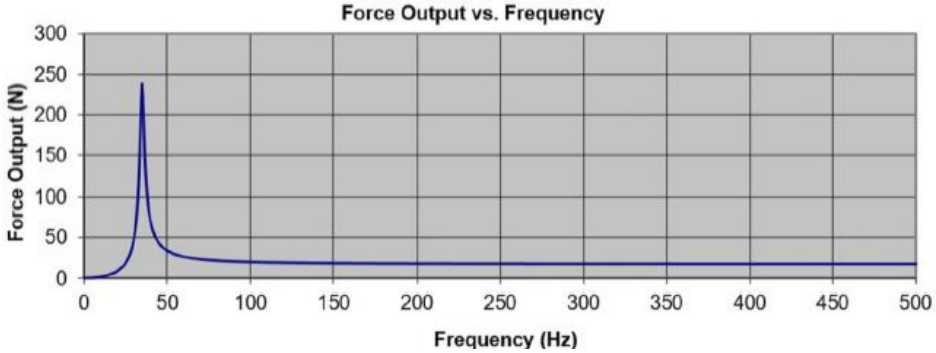


Figure 2: Representative Inertial Actuator Force vs Frequency Curve

IMPLEMENTATION

To implement active vibration control, an inertial actuator can be attached to an engine at a location that is a path of energy to the cabin. The body side of an engine mount location is a good attachment point. A vibration sensor and an adaptive controller complete the system. Figure 3 shows a depiction of this arrangement.

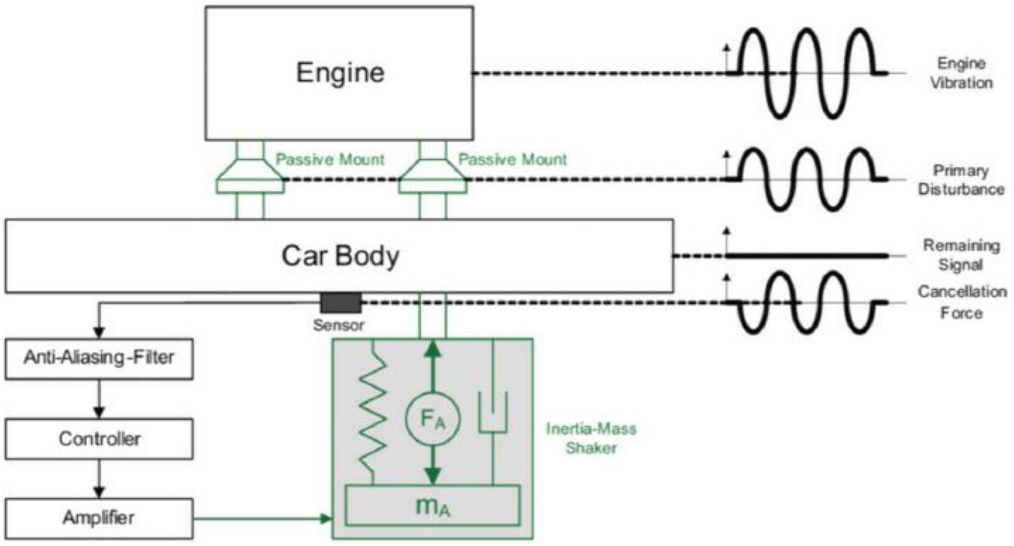


Figure 3: Engine Mounting of Inertial Actuator for AVC
[adapted from Svaricek 2010]

If the input to the inertial actuator is connected to an energy harvesting circuit, energy is available to be harvested. Figure 4 shows the output of an inertial actuator when subjected to a low frequency vibration.

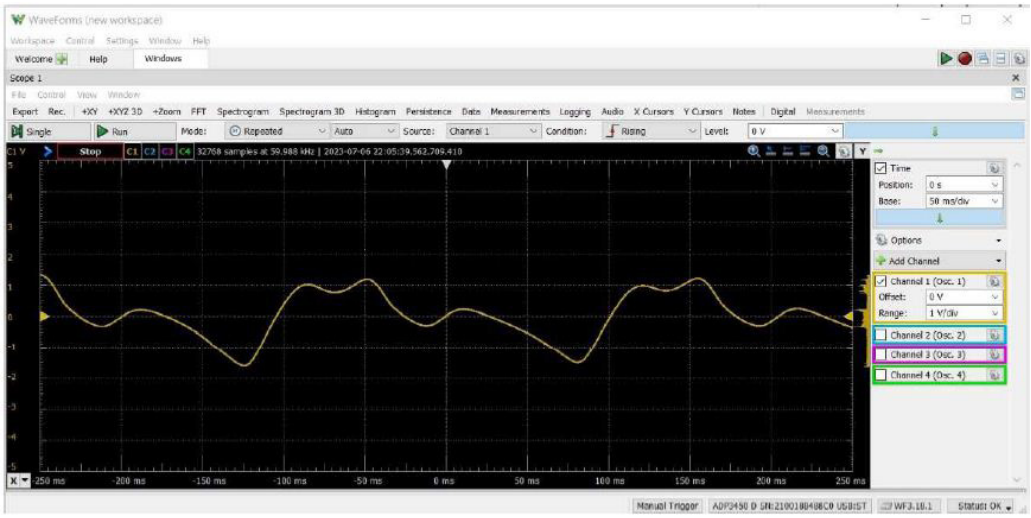


Figure 4: Energy Harvesting System Voltage Generation (without conditioning)

CONCLUSION

Our societal concern with energy conservation and clean energy sourcing means that we must look to scavenge power where it is available. Anywhere there is either electromagnetic actuation or a reversible process offers the potential for energy harvesting. Although inertial actuation was shown, the same approach could be applied to a piezoelectric actuator. It is incumbent upon the designers of systems to see the opportunities where energy harvesting can be applied.

REFERENCES

[1] Markets and Markets. *Energy Harvesting System Market with COVID-19 Impact Analysis by End-Use System, Technology, Component (Transducers, Power Management Integrated Circuits and Secondary Batieries), Application, and Region – Global Forecast to 2026*. https://www.prnewswire.com/news-releases/energy-harvesting-system-market-worth-701-million-by-2026--exclusive-report-by-marketsandmarkets-301316262.html. Accessed 6 July 2023.

[2] Landau, Ioan Doré et al. *Adaptive and Robust Active Vibration Control: Methodology and Tests*. Springer International Publishing, 2017. DOI.org (Crossref), https://doi.org/10.1007/978-3-319-41450-8.

[3] Svaricek, Ferdinand et al. *Automotive Applications of Active Vibration Control*. 2010. *ResearchGate*, https://doi.org/10.5772/10149.

Incorporating Sustainability into Existing Curriculum

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Abstract

Environmental and social sustainability are critical to meet the long-term needs of humans. Corporate Social Responsibility (CSR) is becoming prominent across the spectrum of companies and government bodies. Despite the relevance, classroom teaching is facing challenges and lagging in including topics related to sustainability in the curriculum. In this study, we focus on incorporating CSR into accounting classes. Various ideas and options are presented to embed coursework that helps teach CSR concepts. We use the accounting curriculum primarily; however, other business disciplines can also use our methods effectively.

INTRODUCTION

United Nations Industrial Development Organization defines CSR as "a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders." Using CSR, companies strike a balance between economic, social, and environmental performance. Sometimes the approach is also called a triple-bottom-line focus. The three bottom lines are profit, planet, and people.

Many companies have gone all into sustainability management practices. For example, 80% of companies worldwide now report on Sustainability (KPMG survey, December 2020). Leading financial sector company BlackRock CEO said, "We believe that all investors, along with regulators, insurers, and the public, need a clearer picture of how companies are managing sustainability-related questions. This data should extend beyond climate to questions around how each company serves its full set of stakeholders, such as the diversity of its workforce, the sustainability of its supply chain, or how well it protects its customers' data. Each company's prospects for growth are inextricable from its ability to operate sustainably and serve its full set of stakeholders."

Sustainability is not a burden on companies. Sustainability-related initiatives can lead to competitive advantages. Eccles et al. (2014) studied a set of companies that have implemented sustainability practices. They found that high sustainability companies have engaged stakeholders, are long-term focused, and are more open in disclosing nonfinancial information. Additionally, such companies exhibit better long-term accounting and stock market performance.

All the above ideas indicate that college classes must teach sustainability-related topics to students. However, most faculty are experts in their own disciplines and may not have the expertise to cover sustainability. Additionally, faculty shy away from including sustainability because they perceive that including such topics will take away valuable time they would have otherwise devoted to the disciplinary topics.

As a result, an informal survey of colleges at a regional academic meeting indicated a very low percentage of faculty covering sustainability topics. The coverage is even lower in accounting classes. In this paper, we elaborate on simple means to include sustainability in accounting classes. The methods rely on reference material covered outside the classroom. The content is adjusted to seamlessly include sustainability while covering different disciplinary topics. As a result, the suggestions in this paper take away very little, if any, time from the classes.

CONCEPTUALIZATION OF ACCOUNTING AND SUSTAINABILITY

At the core level, the accounting discipline caters to the information needs of internal and external stakeholders. External information users may include creditors, investors, regulators, and consumers. See Figure 1. In contrast, the internal users include managers, auditors, marketing and sales, and controllers. The two parts of the accounting discipline deal with information dissemination to internal and external stakeholders. Financial accounting provides information to external stakeholders, while Managerial accounting relates to the internal stakeholders. See Figure 2. It is clear from the earlier discussion that both external and internal users may have an explicit interest in sustainability-related practices and reporting.

Figure 3 reports on the accounting ecosystem related to sustainability management and reporting. Sustainability performance is impacted by the organization's structure, financial and non-financial incentives, and the measures used to assess performance. These three are impacted by the sustainability strategy of the company which in turn is driven by customers, technology, and regulatory bodies. In the next section, we present how the ideas can be incorporated into various accounting classrooms.

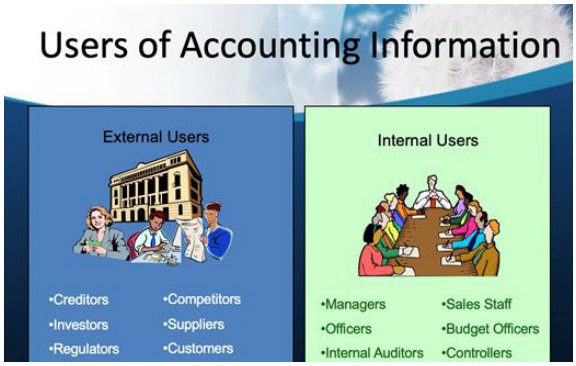


Figure 1: Users of Accounting Information (adapted from Wild and Shah, 2009)

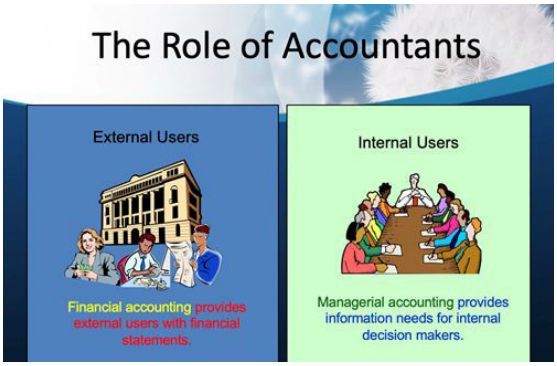


Figure 2: The Role of Accounting (adapted from Wild and Shah, 2009)

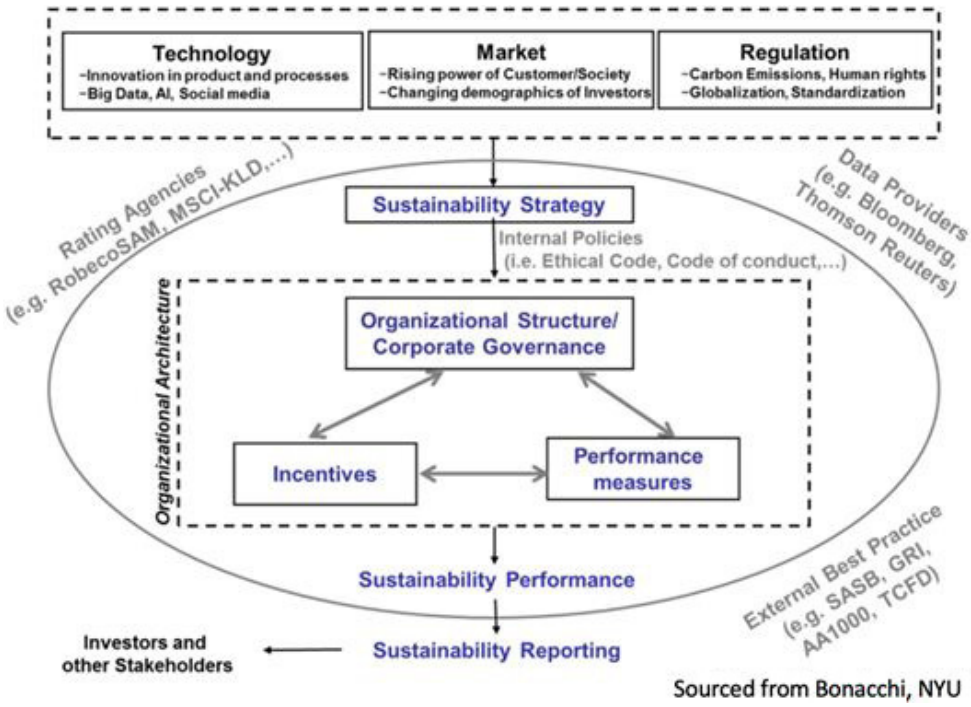


Figure 3: CSR Reporting Mechanism

PROPOSED SUSTAINABILITY TOPICS IN ACCOUNTING CLASSES

We now briefly outline a sample of sustainability-related topics in various accounting classes.

Table 1: Outline of Sample Sustainability-related Topics in Accounting Classes

Accounting Class	*Major Questions to be Included*
Financial Accounting	What is the sustainability recording processes parallel to the traditional accounting cycle?
Intermediate Financial Accounting	How are information analysis techniques, such as return on investment and net present value, impacted by sustainability information? How could the sustainability performance of a subsidiary company affect the reporting of the parent company using traditional investing methods?
Cost Accounting	Sustainability reporting for internal decision making. Performance measurement system for sustainability.
Auditing	How would traditional audit procedures differ or remain the same when providing assurance on sustainability information?
Taxation	Does the tax deduction or credit incentive for environmental remediation cost incurred or accrued facilitate company sustainability objectives?
Graduate Financial Accounting	Stakeholder Engagement (AA1000) How to disclose ESG performance: Shareholder perspective (SASB) vs. stakeholder perspective (GRI)

Source: PSU, 2023

SAMPLE CASE FROM GRADUATE FINANCIAL ACCOUNTING

We now present a sample case of incorporating sustainability in a graduate financial accounting class. An instructor taught the class for many years with a group assignment that covered questions as below:

Original Group Project-Sample Questions

Select two publicly traded competitor companies and compare their financial performance using:

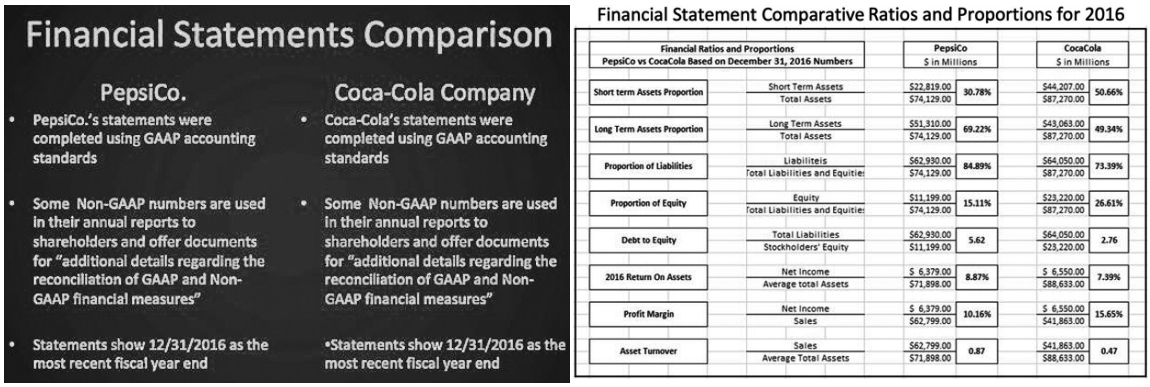


Figure 4: Summary Sample Student Submission I

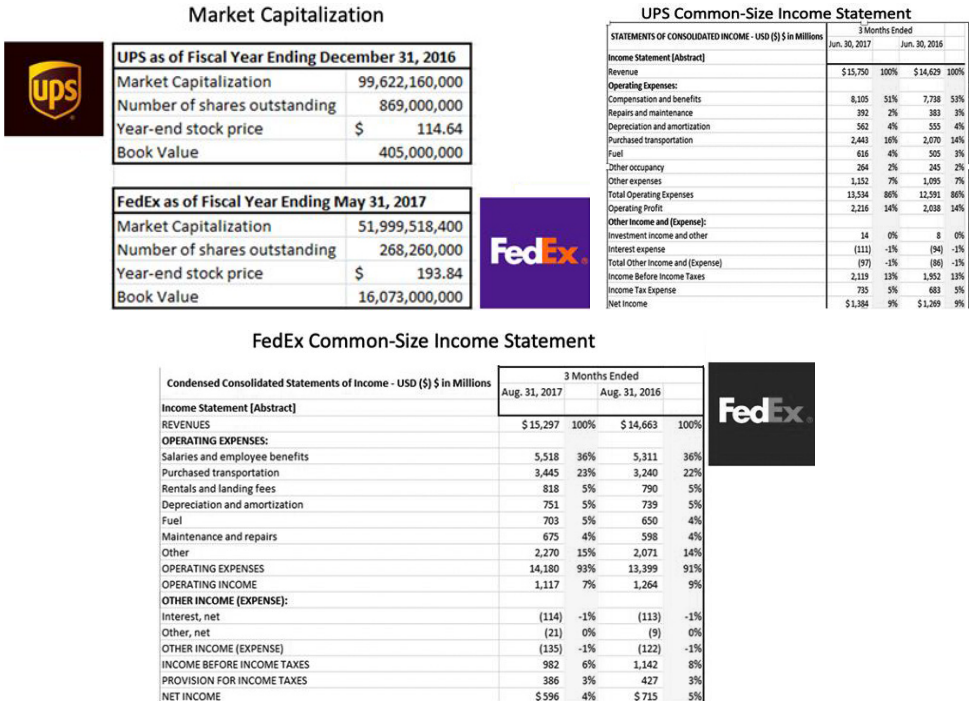


Figure 5: Summary of Sample Student Submission II

1. Balance Sheet Analysis
2. Income statement Analysis
3. Statement of Cash Flows Analysis
4. Market Capitalization vs. Book Value

Note that similar projects/assignments are common at many colleges and programs. The original assignment above effectively tests student understanding of well-established financial reporting methods. The assignment is effective considering the archaic financial-oriented focus of many companies.

For the above assignment, students may choose popular competing companies like Pepsi and Coke or UPS and FedEx. A summary of sample student submissions is shown in Figures 4 and 5.

Student performance on the above two statements indicates a relatively fair understanding of the financial statements. However, the assignment lacks any focus on sustainability. To overcome this, the instructor updated the assignment as follows:

Updated Group Project

Selection of the Company

Select two publicly traded companies that compete with each other in the same industry, one of which should be ranked in the DJSI World.

– DJSI World

"The Dow Jones Sustainability™ World Index comprises global sustainability leaders as identified by S&P Global through the Corporate Sustainability Assessment (CSA). It represents the top 10% of the largest 2,500 companies in the S&P Global BMI based on long-term economic, environmental and social criteria" (SP Global Website).

The Updated Questions Include

Financial-focus questions

1. Balance Sheet Analysis
2. Income statement Analysis
3. Statement of Cash Flows Analysis
4. Market Capitalization vs. Book Value

Sustainability-focused questions (only a subset from below is used) (Adapted from Bonacchi, 2020):

1. How to measure a firm's vision and strategy related to sustainability. How could the effectiveness of sustainability strategy be evaluated?
2. Does the firm consider stakeholders other than the financial investors? How does the firm approach engagement?
3. Is the firm committed to sustainability through its policies? How?
4. Does the form have a governance structure and hierarchy that aligns with the sustainable strategy? Is the alignment effective?

5. Does the sustainable strategy play a role in the compensation? How about the performance measurement?
6. Does the firm assess its own sustainable performance? Does the performance influence internal operations?
7. Does the firm use an established standard for sustainability reporting? Which measure is used?
8. How is the organization perceived by external agencies in regard to sustainability performance? How does it compare to the primary competitors?

To help and provide directions students are provided additional reading materials:

- Sample Readings Related to Environmental, Social, and Governance (ESG) Data.
  - The impact of corporate sustainability on organizational processes and performance. Eccles, R. G., I. Ioannou, and G. Serafeim. 2014. Management Science 60 (11):2835-2857.
  - "ESG Metrics: Reshaping Capitalism?" Serafeim, George, and Jody Grewal. (2019). Harvard Business School Technical Note 116-037.
  - SASB standards: (https://www.sasb.org/standards-overview/)
- Students are also encouraged to explore Sustainability Accounting Standards Board using the following questions:
  - What is sustainability accounting?
  - What is the purpose of sustainability accounting?
  - How does it differ from financial accounting?
  - Who is its intended audience?
  - How will it be used?

CONCLUSIONS

The industry has understood the importance of covering the triple bottom line. As a result, sustainability-related careers are booming. Despite this, colleges are playing catchup as relatively few programs have sustainability topics embedded in traditional degrees. In this paper, we introduce an effective way to incorporate sustainability topics in all major accounting classes commonly offered at most universities and colleges. The methods allow instructors to keep the accounting-based focus of the classroom and introduce sustainability to students through thought-provoking questions on assignments. We believe that our methods could be popular with instructors and may help the accounting curriculum cover sustainability tropics. Other business disciplines can also use similar methods effectively.

REFERENCES

[1] Bonacchi, M., 2020, Accessed from: https://www.stern.nyu.edu/sites/default/files/assets/documents/Accounting%20for%20sustainability_Fall_2020_v3.pdf

[2] Eccles. R.G., Ioannou, I. and Serafeim, G., 2014, *Management Science*, Vol. 60, No. 11, pp. 2835-2857.

[3] Ioannou G.I. and Serafeim G., 2014, The impact of corporate sustainability on organizational processes and performance. Eccles, R. *Management Science* 60 (11): 2835-2857.

[4] PSU, 2023, accessed from https://majorsustainability.smeal.psu.edu/courses-2/

[5] Serafeim, G. and Grewal, J., 2019, "ESG Metrics: Reshaping Capitalism?" Harvard Business School Technical Note 116-037.

[6] Wild J. and Shaw, K., 2009, Financial and Managerial Accounting, McGraw Hill.

Green Energy: Goal 7 of Sustainable Development Goals

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Abstract

In 2015, India ranked fourth among the list of countries most affected by climate change. The situation of climate change is not confined to India but it is faced by all the countries on planet. The concern of India is more alarming since India emits about 3 gigatonnes (Gt) CO2 of greenhouse gases each year; that counts about two and a half tons per person worsening the situation every year. Despite having 17% of the world population, nation emits 7% of global emissions. The rise in temperature is also causing the melting of Himalayan glaciers resulting in unpredicted water flow in major rivers like Ganga, Brahmaputra, Yamuna and others. The frequency and intensity of other disasters like landslide, flood, drought, etc. is also increasing. The temperature has reached to 51 °C risen by 0.7 °C (1.3 °F) between 1901 and 2018 increasing the likeliness of heat wave for 100 times. It is also presumed that if global temperatures were to rise by 2 °C (3.6 °F), around seven million people are projected to be displaced due to submersion of parts of Mumbai and Chennai and other factors. While considering all the issues, it is realized that the only key solution to overcome the worsening impact of climate change is energy. The emissions released from fossil fuels for production of heat and energy needs to be reduced. It has been seen that 75 percent of global greenhouse gas emissions and nearly 90 percent of all carbon dioxide emissions are generated by fossil fuels like coal, oil and gas. The situational need has forced the world to come together on same platform and find the strategy to overcome the alarming situation. "Transforming our world: the 2030 Agenda for Sustainable Development" adopted by 193 countries of the UN General Assembly in September 2015 is that blueprint which was witnessed by all the participating countries to work for the areas affecting people at large in the world. Global goals include 17 cross cutting issues, out of which access to affordable and reliable energy and focus on improving energy efficiency, international cooperation and investment in clean energy infrastructure was goal 7 to be achieved by 2030. Renewable energy sources are all around us and available in abundance with earth in the form of the sun, wind, water, waste, and heat; emitting little or no greenhouse gases or pollutants into the air and are replenished by nature. The main sources for renewable electricity generation includes hydroelectric power, wind power, solar power, biofuels, geothermal energy and less common sources such as tidal power or wave power. Besides, if used with the support of proper technology, it's cheaper, healthier, creates jobs and supports in economic growth.

Meeting the goals of SDG will support in controlling the damage caused to planet and the environment and encouraging use of green energy. Energy efficiency involves efficient

utilization of energy resources that is necessary for sustainable development. It would not only increase the productivity, and reduce Green House Gas (GHG) emissions, solid waste production and thermal pollution but would also support in meeting other parameters of sustainable goals. Government for India has taken various policy decisions in overcoming the climate change performance index of India that ranks eighth among 63 countries which account for 92% of all GHG emissions in the year 2021.

Keywords: *Green Energy, Solar Power, Sustainable Development Goals, Clean Energy, Green House Gas.*

INTRODUCTION

India experienced a gigantic nationwide blackout in 2012 that affected almost 700 million people, paralyzing communication and transportation structure and was tragic for unknown number of victims. Besides supply issues, mismanagement and underdeveloped infrastructure to fulfill energy requirements were the major reasons of this disaster. This incident made everyone realized that steady, efficient and stable distribution of energy system is the basic requirement for robust governance and economic activity.

Economic development can never be achieved without electricity, information technology and automated transportation. They are also essential features of contemporary society, and thus sources of energy and systems that meet these requirements constantly and affordably can be considered as "modern". Population growth is another challenge for developing world to meet the needs for all. Per capita economic consumption is also increasing with the time, creating much greater demand for the services and consequently for access to modern energy. There are manifold socioeconomic dimensions of energy reliability.

It is also implicit that in next 25 years, about 90 percent of the growth in energy demand will come from countries that are not members of the Organisation for Economic Co-operation and Development (OECD), i.e. countries outside of the Western economies and Japan. To meet this growing wave of energy demand would be one of the vital challenge of the twenty-first century, and is a reason why it catches the central place by most of the nations. In this context, 2015 was a landmark year across the world for multilateral and international policy shaping, with the adoption of several major agreements.

The Sustainable Development Goals (SDGs) proposed by the Open Working Group of the General Assembly of the United Nations recognized the significance of the natural environment and its resources for the survival of human well-being. In January 2015, the General Assembly began the negotiation process on the post-2015 development agenda and the process culminated in the subsequent adoption of the 2030 Agenda for Sustainable Development, by all United Nations Member States. The 2030 Agenda for Sustainable Development provides a shared blueprint as a universal call to action for peace and prosperity for people and the planet, now and into the future. The sustainable development goals identified 17 core areas which need an urgent call for action by all countries – developed and developing – in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand

with strategies to improve health and education, reduce inequality, and spur economic growth – all while protecting earth through tackling climate change and working to preserve our oceans and forests. It is also committed for innovations, clean water & sanitation, affordable & clean energy, sustainable cities & communities, justice & strong institutions. The 17 SDGs are amalgamated — and are identified as interdependent. The action in one area not only affect outcomes in others but also complement in development and balancing other areas for social, economic and environmental sustainability. All the participating countries have committed to prioritize progress for those who're furthest at the back. India is also a signatory of **UN Sustainable Development Summit** took place in New York in September 2015, and has shown its commitment towards achieving the goals of Sustainable Development with full dedication.

EFFECTS OF TRADITIONAL ENERGY SOURCES AND CHALLENGES AHEAD

According to a report of UNEP, 3 billion people rely on wood, coal, charcoal or animal waste for cooking and heating. It has been observed for decades, that the main sources of electricity production in India and other countries are fossil fuels such as coal, oil or gas. Without realizing that use of fossil fuels without managing greenhouse gases will have global climate implications causing climate change and have harmful impact on people's well-being and the environment. A large chunk of the greenhouse gases that has trapped the heat of sun are generated, by burning fossil fuels to generate electricity and heat used for energy production. The impact is worldwide affecting everyone without any discrimination. In a report of UNICEF, it has been mentioned that indoor air pollution, largely caused by the burning of solid fuels, contributes to over half a million deaths of children under 5. Besides death, many children suffer with long lasting damage to their developing brains and lungs. It's not only children who suffer from the gases released with the burning of fossil fuels, everyone including men and woman faces health challenges. In absence of electricity, women and girls have to spend hours fetching water, clinics are incapable to store vaccines for children and other emergency situations, school students are unable to study at night, and people cannot run competitive businesses. Slow progress towards clean cooking solutions is of serious global concern, affecting both human health and the environment. Sustainable energy measures provide considerable benefits in reducing indoor air pollution and related health risks. In absence of serious implementation of policy decisions and efforts for green energy with the involvement of community, it is believed that nearly one third of the world's population – mostly women and children – will continue to be exposed to harmful household air pollution.

Kerosene lamp is one among the list causing major source of pollution, harming people's health and the environment. Coal is another important fuel that is crucial for the operation of industries and has been essential to industrialization and the overall growth of human well-being. According to the paper published in National Geographic Magazine in 2014 by Michelle Nijhuis, coal provides about 40 per cent of the world's electricity and nearly the same fraction of global carbon emissions. With a low mass-to-energy ratio, coal is also inefficient

and creates massive pollution. Thus, coal is neither sustainable at the global level because of its contribution to anthropogenic climate change, nor at the local scale because it is a threat to public health and environmental conditions (it does not produce only polluting by-products of combustion, the process of coal mining creates innumerable ecological problems).

Lack of access to energy supplies and transformation systems is a serious constraint to human and economic development. India is the second-largest coal producing and consuming country on earth and the third-largest emitter of greenhouse gases, India's transition from carbon-intensive resources is a critical front in the global climate change fight. Contributing for around 60 per cent of total global greenhouse gases emissions, energy has become the leading contributor to climate change. Since 1990, global emissions of Carbon dioxide have increased by more than 46 per cent. Strategies need to be identified to shift to the use of renewable and related clean energy technologies to mitigate the fossil fuel usage.

BENEFITS OF GREEN ENERGY SOURCES

The global electricity use is rising rapidly and without a stable electricity supply, the economy of countries may tumble down. Energy should generate a constant stream of power to meet basic human needs, maintain and improve social functioning, to move ahead the living standards of people with overall environmental and economic growth. These functions should be sustainable enough to meet the demands of the community for personal and professional use. It can fulfill the requirement only if the power generated by energy use is greater than the resulting waste and pollution. Though we claim that almost 9 out of 10 people now have access to electricity, but reaching the millions of people in dark and uninterrupted electricity supply without affecting green house gases to those who have access around the world is a challenging task. All sustainable energy must be modern, although not all forms of modern energy are sustainable.

In the past few years it has been realized that the environment provides a series of renewable and non-renewable energy sources i.e. solar, wind, hydropower, geothermal, biofuels, natural gas, coal, petroleum, uranium. And a well-established energy system can support and promote all sectors: from businesses, medicine and education to agriculture, infrastructure, communications and high-technology. Though the access to electricity in developing countries has begun to pick up the pace, energy efficiency still needs to improve, and renewable energy requirements have to make impressive gain. Nevertheless, more focused attention is needed to improve access to clean and safe cooking fuels and technologies for 2.8 billion people.

According to Tim Buckley, Director of Energy Finance Studies for Australia and South Asia for IEEFA, solar is now by far the lowest cost source of new energy in India. Since India's economy is going to see its energy consumption double over the next decade or two, and country is working hard to enhance energy security, which means they are supposed to ideally use domestic energy supplies. Solar energy also ensure to reduce the air pollution and water pollution since India is also suffering from the massive air pollution problem and it would also support in minimizing taxing on their water supply. Besides, it does not emit

carbon dioxide or methane, so there is an additional benefit of solving the world's climate change emergency. Sustainable energy measures provide considerable benefits in reducing indoor air pollution and related health risks. It's a known fact that efficient energy services is key to prevent disease and fighting pandemics – from powering healthcare facilities and supplying clean water for essential hygiene, to enabling communications and IT services that connect people. For now, solar energy is the only solution of many issues of immediate concern.

To meet the instant environmental and economic challenges, countries can accelerate the switch over to an affordable, consistent and sustainable energy system by investing in renewable energy resources, prioritizing energy efficient practices, and implement clean energy technologies and infrastructure. Today, hydropower is the largest single renewable electricity source, providing 16% of world electricity at competitive prices. It dominates the electricity mix in several countries, developed, emerging or developing. Bioenergy is the single largest renewable energy source today, providing 10% of world primary energy supply.

Big business houses and industries can maintain and protect ecosystems and commit to sourcing 100% of operational electricity needs from renewable sources. It is possible when the employers prioritize to reduce the internal demand for transport by prioritizing telecommunications. Other ways could be pooling of vehicle for transportation of employees and encouraging less energy intensive modes such as train travel over auto and air travel. Investors can put in more in sustainable energy services, bringing new technologies to the market quickly from a diverse supplier base. At individual level also, the energy could be saved though different methods. One can plugging appliances into a power strip and turning them off completely when not in use, including your television, computer, microwave, etc. Carbon emission could also be reduced on using bike, taking small walk or using public transport along with judicious use of water and electricity.

TARGETS OF SDG

The targets linked to the energy under Sustainable Development Goals by 2030 involve;

- universal access to affordable, reliable and modern energy services;
- to increase substantially the share of renewable energy in the global energy mix;
- double the global rate of improvement in energy efficiency;
- enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology; and
- expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.

INITIATIVES OF GOVERNMENT OF INDIA AND DIFFERENT AGENCIES

National Institute of Solar Energy has assessed the Country's solar potential of about 748 GW assuming 3% of the waste land area to be covered by Solar PV modules. Solar energy has taken a central place in India's National Action Plan on Climate Change with National Solar Mission as one of the key Missions. National Solar Mission (NSM) was launched on 11th January, 2010 and is a major initiative of the Government of India with active participation of states to promote ecological sustainable growth while addressing India's energy security challenges. It has also constituted a major contribution by India to the global effort to meet the challenges of climate change.

India is committed to increase non-fossil energy capacity to 500 Gigawatts (GWs); fulfilling 50 percent of energy requirements from renewable sources; reducing carbon intensity of economy by 45 percent; and reducing total projected carbon emissions by one billion tones by 2030.

To promote renewable energy in the country, the Government of India has taken several measures that includes:

- Permitting Foreign Direct Investment (FDI) up to 100 percent under the automatic route,
- Waiver of Inter State Transmission System (ISTS) charges for inter-state sale of solar and wind power for projects to be commissioned by 30th June 2025,
- Declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2029-30,
- Setting up of Ultra Mega Renewable Energy Parks to provide land and transmission to Renewable Energy (RE) developers for installation of renewable energy projects at large scale,
- Schemes such as Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM), Solar Rooftop Phase II, 12000 MW CPSU Scheme Phase II, etc.,
- Laying of new transmission lines and creating new sub-station capacity under the Green Energy Corridor Scheme for evacuation of renewable power,
- Notification of standards for deployment of solar photovoltaic system/devices,
- Setting up of Project Development Cell for attracting and facilitating investments,
- Standard Bidding Guidelines for tariff based competitive bidding process for procurement of Power from Grid Connected Solar PV and Wind Projects.
- Government has issued orders that power shall be dispatched against Letter of Credit (LC) or advance payment to ensure timely payment by distribution licensees to RE generators.
- Notification of Promoting Renewable Energy through Green Energy Open Access Rules 2022.
- Notification of "The Electricity (Late Payment Surcharge and related matters) Rules (LPS rules).
- Launch of Green Term Ahead Market (GTAM) to facilitate sale of Renewable Energy Power through exchanges.

- In January 2022, the government of India approved an investment of Rs. 1500 crores in the Indian Renewable Energy (RE) sector. The government also approved the Intra-state Transmission System – Green Energy Corridor Phase – II for laying infrastructure for connecting electricity generated from renewable with the power grid in seven states.
- To facilitate large scale grid connected solar power projects, a scheme for Development of Solar Parks and Ultra Mega Solar Power Projects is under implementation with a target capacity of 40 GW capacity by March 2024.
- On 75th Independence Day, the National Green Hydrogen Mission was launched to aid the government in meeting its climate targets and making India a global hub for production, utilization and export of Green Hydrogen and its derivatives. This initiative would help in meeting the target of production of renewable energy capacity. Hydrogen and Ammonia are envisaged to be the future fuels to replace fossil fuels. Production of these fuels by using power from renewable energy, termed as green hydrogen and green ammonia, is one of the major requirements towards environmentally sustainable energy security of the nation. On 4 January 2023, the Union Cabinet approved the National Green Hydrogen Mission with an outlay of Rs. 19,744 crore and a target of producing 5 million metric tones (MMT) per annum of Green Hydrogen in country by 2030. The following components have, inter alia, been announced as part of the mission:
  (a) Facilitating demand creation through exports and domestic utilization;
  (b) Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, which includes incentives for manufacturing of electrolysers and production of green hydrogen;
  (c) Pilot Projects for steel, mobility, shipping, decentralized energy applications, hydrogen production from biomass, hydrogen storage, etc.;
  (d) Development of Green Hydrogen Hubs;
  (e) Support for infrastructure development;
  (f) Establishing a robust framework of regulations and standards;
  (g) Research & Development programme;
  (h) Skill development programme; and
  (i) Public awareness and outreach programme.

In 2020, while considering the demand of locally manufactured power; to boost the domestic solar manufacturing base and reduce dependency on China for solar cells and modules, Indian power Minister announced incentives for Indian made solar modules to promote domestic units and suppliers. It has promoted the Indian manufacturers and India was benefitted with the combination of low-cost financing and expected lower cost of solar module resulting in driving down solar prices in India.

The largest coal-producing company in the world, Coal India also initiated in establishing an integrated solar wafer manufacturing facility to enter the solar value-chain business and launch a new renewable energy vertical.

Indian Railways has also taken the lead by setting the target of becoming Net Zero Carbon Emitter by 2030. To achieve its goal, railways has started its 100 percent electrification of network, improving energy efficiency of locomotives and trains and fixed installations, green certification for installations/stations, fitting bio toilets in coaches and switching to renewable sources of energy.

The World Bank Group (WBG) is investing in energy access, energy efficiency and renewable energy through launch of its Scaling Solar, a "one-stop shop" for governments that want to attract private investors to build large-scale solar plants, but lack the purchasing power of bigger emerging markets where strong competition has driven down solar prices to virtual parity with oil, gas, and coal-fired electricity. The services provided under Scaling Solar includes a package of technical assistance, templates for documents, pre-approved financing, insurance products, and guarantees that take the guesswork out of whether a solar project is viable and bankable for both governments and investors.

Organisations like UNICEF are also supporting and promoting sustainable energy by providing solar lights for schools, solar pumps in communities vulnerable to droughts and floods, and other off-grid energy solutions that helps in improving children's overall learning and health system.

At the end of 2021, India was on 4th position in solar PV deployment across the globe. On 30 November 2022, solar power installed capacity had reached around 61.97 GW. Presently, solar tariff in India is very competitive and has achieved grid parity. Globally, India has achieved the 4th position in overall renewable energy. India's renewable power generation capacity had increased 1.5 times; solar power installed capacity has increased 25 times from 2.6 GW to 66.8 GW and wind capacity increased 2 times from 21 GW to 42.6 GW since 2014.

CONCLUSION

Sustainable Development Goals have helped to set the tone for cooperation and contributed to an emerging consensus on priorities. In terms of policies, the transfer of clean energy technologies to developing countries is an important example. Development should be sensitive to local conditions, and identify consensus of end users and policy makers. The reckless pursuit of bio-fuels at the global and regional levels may result in unintended yet severe environmental degradation. Access to affordable, reliable, sustainable and modern energy is integrated to global development in the twenty-first century. And the task is achievable if all the national and international organizations have sufficient vision, the governments can work together, and if correct vision is communicated to communities and individuals are offered the right incentives and the necessary means.

Out of all the green energy resources, solar energy intervention is the one that is very feasible in country like India. India is endowed with vast solar energy potential since it is abundantly available. It is the most secure perspective from the energy security perspective. The geography of India and solar cells are very supportive for solar energy system in the nation. About 5,000 trillion kWh per year energy is incident over India's land area with most parts receiving 4-7 kWh per sq. m per day. Solar photovoltaic power can efficiently be harnessed providing huge scalability in India. It also provides the ability to produce power

on a scattered basis and enables fast capacity addition with little lead times. Other benefit of off-grid decentralized and low-temperature applications is valuable from a rural application perspective and meeting the energy needs for rural and urban areas. Its biggest advantage is that solar farms can be set up even in small sizes which increases availability and reduces transmission costs. Despite of these advantages, the uptake of solar energy has been slow. This is because the old silicon-based technology used in solar cells had to be imported and had efficiency below 15%, making it too expensive to have small solar farms.

The solar energy can bring the social and economic change we all want to see in India through reduction in labour among rural women and girls who need to collect fuel wood from long distances and do cooking in grey kitchens in presence of all the poisonous gases, minimization of the risks of contracting lung and eye ailments along with other skin issues, and eventually, the improvement in the standard of living and employment generation through creation of opportunities for economic activities at village level. Solar energy sector could be emerged as a significant player in the grid connected power generation capacity over the years. Besides supporting the government agenda of sustainable growth, it would also be emerged as an integral part of the solution to meet the energy needs of country and as an essential player for energy security. Solar energy based decentralized and scattered applications have the benefit to reach millions of people in villages and meet their cooking, lighting and other energy requirements in an environment friendly manner.

But this landscape is revolutionized with the recent technological and policy developments and hand holding of all the countries. The new perovskite-based technology has an improved efficiency of nearly 30% and its cost is only one-tenth of the old technology, which makes the system economically viable at smaller scales. The installation of home based solar panels has also enabled access to clean energy and reduced dependence on unreliable conventional energy and has overcome the difficulty of extending conventional electricity grids to remote areas. And the encouragement of Made in India products through Aatma Nirbhar Bharat policy of government has supported in production of solar cell technology within India, leading to lower costs and product reliability. In alignment with SDG Goal 7, the Aspirational District Programme launched under the umbrella of "Sabka Saath, Sabka Vikas" is the another initiative of government to channelise such a revolution by leveraging local communities, as it removes heterogeneities in development of regional variations and focuses on participation of all in the nation's economy. The construction of 183 km of green road with recycled plastic and geogrid technology in Goalpara, Assam is a perfect example of use of green technology for basic infrastructure development. Such transformational initiatives to a greener future need to be replicated in other districts as a mass movement which are leveraging and harnessing the local resources and participating in bringing about a positive social change. It led to a large delta development for the habitants of district with access to all-weather roads.

At this stage, we need to focus on programmes which can increase scope in energy transitions, so that India can achieve the SDG Agenda for 2030 and can meet the ambition to come up as a world leader in green energy. It serves as a lighthouse not just for our green

energy revolution but also provides a model that is replicable across the world. With the motto of progressing with the people of the country and leaving no one behind, the success of our aspirational districts have come out with flying colours and has ensured that if dedicated and constant efforts are done by the government and community, we may reach at number one position to meet the targets of clean energy at the global front.

REFERENCES

[1] "Climate Change Performance Index" (PDF). November 2022. Retrieved 15 November 2022.

[2] "Emissions Gap Report 2019". UN Environment Programme. 2019. Archived from the original on 2019-11-20. Retrieved 10 June 2021.

[3] "Greenhouse Gas Emissions in India" (PDF). September 2018. Archived (PDF) from the original on 2020-02-14. Retrieved 10 June 2021.

[4] "How climate change hits India's poor". *BBC News*, 1 Feb 2007. Retrieved 10 June 2021.

[5] "Warmer Tibet can see Brahmaputra flood Assam | *India News – Times of India*". *The Times of India*. Retrieved 2021-03-11.

[6] Climate change in India – Wikipedia.

[7] Economic Survey 2021-22.

[8] Helen Pidd, "India blackouts leave 700 million without power", *The Guardian*, 31 July 2012. Available from http://www.theguardian.com/world/2012/jul/31/india-blackout-electricity-power-cuts.

[9] How green is Union Budget 2022-23? AG/HP/RC/RN/SS https://www.indiabudget.gov.in/doc/eb/sumsbe.pdf https://www.indiabudget.gov.in/doc/eb/sbe28.pdf https://www.indiabudget.gov.in/doc/Budget_at_Glance/bag7.pdf https://www.indiabudget.gov.in/doc/eb/sumsbe.pdf

[10] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1745433

[11] International Energy Agency, World Energy Outlook 2011 Factsheet: How will global energy markets evolve to 2035? (Paris, 2011). Available from http://www.iea.org/media/weowebsite/factsheets/factsheets.pdf.

[12] International Energy Agency, Energy Poverty: How to make modern energy access universal? Special early excerpt of the World Energy Outlook (WEO) 2010 for the UN General Assembly on the Millennium Development Goals (Paris, 2010) p. 9, 20. Available from http://www.iea.org/publications/freepublications/publication/weo-2010---special-report---how-to-make-modern-energy-access-universal.html.

[13] International Energy Agency, Energy Poverty: How to make modern energy access universal?, p. 9. Available from http://www.iea.org/publications/freepublications/publication/weo-2010---special-report---how-to-make-modern-energy-access-universal.html.

[14] International Energy Agency, World Energy Outlook 2010 (Paris, 2010), p. 237. Available from http://www.worldenergyoutlook.org/media/weo2010.pdf.

[15] Juhi Jain, Siddhey Shinde; A Green India for All: An aspiration; *Times of India*; October 21, 2021;

[16] Julia Pyper; How India's renewable energy sector survived and thrived in a turbulent 2020; January 14, 2021.

[17] Kreft, Sönke; Eckstein, David; Melchior, Inga (November 2016). Global Climate Risk Index 2017 (PDF). Bonn: Germanwatch e.V. ISBN 978-3-943704-49-5. Archived from the original (PDF) on 25 September 2017. Retrieved 10 July 2017.

[18] Michelle Nijhuis, "Can Coal Ever Be Clean?", *National Geographic Magazine*, Vol. 225, Issue 4 (April 2014), p. 30-40. Available from http://ngm.nationalgeographic.com/2014/04/coal/nijhuis-text.

[19] Michelle Nijhuis; *National Geographic Magazine*; 2014.

[20] Ministry of New and Renewable Energy; Press Information Bureau, Delhi; 9 February 2023.

[21] National Clean Air Programme (NCAP) – A Report by MoEFCC.

[22] PIB Press Release on Efforts to drive low carbon development pathways in industry sector are critical for achieving the goals of the Paris Agreement: Shri Bhupender Yadav dated November 9, 2021.

[23] PIB Press Release on NITI Aayog Releases SDG India Index and Dashboard 2020–21dated June 3, 2021.

[24] PIB Press Release on Union Minister of Power and MNRE, Shri R.K. Singh, delivers keynote address at the 'India-ISA Energy Transition Dialogue 2021' dated 25th August 2021.

[25] Prime Minister's address at G20 Summit session II: Climate Change and Environment.

[26] SDG India Index 2020-21 Report by Niti Aayog.

[27] SDSN, Action Agenda Report 2014).

[28] Sethi, Nitin (3 February 2007). "Global warming: Mumbai to face the heat". *The Times of India*. Archived from the original on 23 October 2012. Retrieved 2007-03-18.

[29] Sharma, Vibha (15 June 2020). "Average temperature over India projected to rise by 4.4 degrees Celsius: Govt report on impact of climate change in country". *Tribune India*. Retrieved 30 November 2020.

[30] Srikanth Subbarao and Bob Lloyd, "Can the Clean Development Mechanism (CDM) Deliver?", *Energy Policy*, vol. 39, issue 3 (March 2011), p. 1600–1611.

[31] Union Budget 2022.

Technological Innovation in HR Processes and Green HRM Management Practices

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Abstract

This abstract highlights the intersection of technological innovation in HR processes and the adoption of Green HRM management practices. The advancement of technology has revolutionized various aspects of HR, enabling organizations to streamline operations, enhance efficiency, and improve the overall employee experience. Simultaneously, the concept of Green HRM has gained prominence as companies aim to incorporate environmentally sustainable practices into their HR strategies. This abstract provides an overview of the key technological innovations in HR, including automation, AI, cloud-based systems, and data analytics, emphasizing their impact on HR processes. It also explores Green HRM management practices such as employee engagement, sustainable talent acquisition, green training and development, flexible work arrangements, and green performance management. By embracing these innovations and practices, organizations can achieve operational excellence, foster a culture of sustainability, and contribute to a greener future. The study seeks to uncover major developments such as automation, artificial intelligence (AI), cloud-based systems, and data analytics as well as the effects of technological innovation on HR procedures. Additionally, it aims to identify and examine the primary Green HRM management strategies, such as green performance management, flexible work schedules, green training and development, and employee engagement. The goal of the study is to identify possible synergies and benefits of combining these two fields by investigating the relationship between technological innovation in HR operations and Green HRM practices. It also aims to offer advice to businesses on how to use technological advancement to support green HRM practices and create sustainable HR procedures. The study will contribute to a better understanding of the impact and potential of technology innovation in HR processes and Green HRM management practices by thoroughly examining relevant literature, case studies, surveys, and interviews. The findings will be useful for firms looking to strengthen their HR strategies, increase their sustainability initiatives, and maximize their use of technology in HR operations.

Keywords: *Technology, Innovation, HR, Green HRM, Management Practices.*

INTRODUCTION

Green HRM is the application of HRM policies to encourage the responsible use of resources within commercial enterprises and, more broadly, to advance environmental causes. As concern over global warming and the damaging effects of much business activity

on the environment spreads, green efforts within HRM are growing. They frequently are a component of larger corporate social responsibility (CSR) programs. A strategy that stresses the incorporation of environmental sustainability principles into human resource management procedures within enterprises is known as green HRM or green human resource management. Recognizing the critical role HRM functions play in advancing and putting into practice eco-friendly practices, it links HR strategy to the organization's larger sustainability objectives. As businesses started to realize how important it was to address environmental issues and implement sustainable business practices, the idea of "green HRM" developed. By taking into account the environmental impact of HR activities and putting a strong emphasis on encouraging a sustainable culture among employees, it goes beyond conventional HRM methods.

The term "green HRM" refers to a variety of procedures intended to lessen the organization's environmental impact and encourage environmentally friendly behavior among employees. Sustainable talent acquisition, employee involvement in environmental efforts, green training and development programs, adaptable work schedules to cut down on commuting, and the integration of environmental performance measures into performance management are some examples of these practices. Adopting Green HRM practices has a number of advantages. It aids businesses in lowering resource consumption, minimizing waste production, adhering to environmental laws, and fostering corporate social responsibility. Additionally, it can raise staff morale, draw in talent who cares about the environment, and enhance the company's standing as a trustworthy and sustainable employer. However, putting Green HRM concepts into practice could also be difficult. Employers must make sure that their staff members are informed about and inspired to adopt environmentally responsible habits. In order to promote green projects, they must create strong communication plans and allocate enough funding for staff training and development. Strong leadership support, staff engagement, and the incorporation of sustainability principles into the organization's culture and values are all necessary for overcoming these obstacles. Green HRM has gained popularity as a strategic method to match HRM practices with sustainability objectives as businesses increasingly acknowledge the significance of environmental sustainability. Organizations may help create a greener future while benefiting from increased environmental performance and employee engagement by integrating green practices into their HR procedures.

CHALLENGES IN TECHNOLOGICAL INNOVATION IN HR PROCESSES AND GREEN HRM MANAGEMENT PRACTICES:

Green HRM techniques and technical advancements in HR operations have many advantages, but firms may encounter difficulties when putting them into effect. Among the principal difficulties are:

1. **Resistance to Change:** Putting technological advancements and Green HRM practices into effect frequently calls for a mental shift and adjustments to current procedures.

Employee and stakeholder resistance to change can obstruct the effective adoption and integration of new technology and sustainability efforts. Effective change management techniques, transparent communication, and employee involvement are necessary to overcome resistance.

2. **Infrastructure Constraints and Technological Advancements:** It may necessitate major resource expenditures for things like modernized infrastructure, training initiatives, and HR systems. Implementing and maintaining these innovations and practices may provide difficulties for small and medium-sized businesses with constrained financial and technical resources. Prioritizing investments and creating cost-effective solutions become essential.
3. **Skills Gaps and Training Needs:** Embracing technological advancements frequently necessitates that staff members pick up new skills and adjust to shifting jobs. However, there may be skill shortages that prevent the effective adoption and use of new technologies. Similar to this, implementing green HRM practices might necessitate that staff members comprehend and apply sustainability principles to their work. Effective adoption requires addressing skill gaps through training and development initiatives.
4. **Data Privacy and Security Issues:** New HR technologies necessitate the gathering, storing, and analysis of substantial volumes of employee data. It might be difficult to ensure data security, privacy, and compliance with applicable laws. To protect employee information, organizations must set up rules and procedures and execute strong data protection measures.
5. **Barriers that are Cultural and Organizational:** Organizational culture and values may make it difficult to implement new technologies and green HRM techniques. Progress may be hampered by management resistance, staff ignorance or lack of buy-in, and competing objectives. Strong leadership support, good communication, and the development of a shared understanding of the advantages and significance of these practices are necessary for overcoming organizational and cultural hurdles.
6. **Impact and Return on Investment Measuring:** It might be difficult to determine the impact and return on investment (ROI) of technical advancements in HR procedures and Green HRM practices. Appropriate measurements and evaluation frameworks are needed to measure the physical and intangible advantages, including increased productivity, employee satisfaction, and environmental impact. To prove the value of and defend investments, it is crucial to develop efficient measuring tools.
7. **A systematic strategy, stakeholder participation, and continual improvement** are required to address these difficulties. To overcome these obstacles and maximize the advantages of technological innovation in HR processes and Green HRM practices, organizations should develop comprehensive change management strategies, invest in employee training and development, ensure data privacy and security, align practices with organizational culture, and establish appropriate measurement mechanisms.

TECHNOLOGICAL INNOVATION IN HR PROCESSES AND GREEN HRM MANAGEMENT PRACTICES

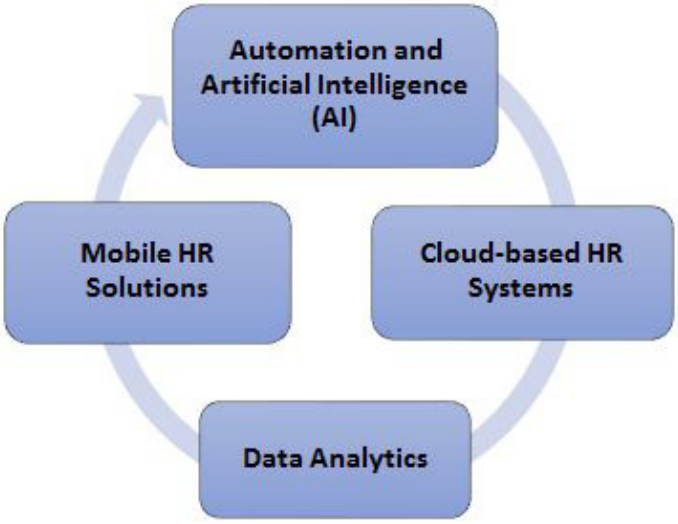


Figure 1: Technological Innovation in HR Processes

- **Automation and Artificial Intelligence (AI):** Automation and AI have revolutionized HR processes by automating repetitive and time-consuming tasks. HR departments can utilize AI-powered chatbots to handle candidate screening, resume parsing, and initial candidate interactions. These technologies enhance efficiency, reduce human error, and improve the overall candidate experience (Khanna & Raza, 2020). Additionally, AI-driven analytics tools enable HR professionals to gain valuable insights into employee data, performance metrics, and workforce trends (Marler & Boudreau, 2017).
- **Cloud-based HR Systems:** Cloud computing has provided organizations with a centralized and secure platform for HR data management. Cloud-based HR systems enable easy access to employee records, benefits administration, and payroll management. Moreover, these systems facilitate seamless collaboration among HR teams, enhance data security, and offer scalability for growing organizations (Bondarouk et al., 2017).
- **Data Analytics:** The advent of data analytics has transformed HR processes, enabling evidence-based decision-making. HR departments can leverage advanced analytics tools to analyze employee performance, engagement levels, attrition rates, and identify skill gaps. This data-driven approach helps in predicting future workforce needs, implementing targeted training programs, and optimizing talent acquisition strategies (Boudreau & Cascio, 2017).
- **Mobile HR Solutions:** Mobile applications have become an integral part of HR processes, providing employees with on-the-go access to HR services and information. Mobile HR solutions allow employees to manage personal data, submit time-off requests, access training materials, and receive real-time notifications. These applications enhance employee engagement, promote self-service, and improve overall communication within organizations (Alamri et al., 2020).



Figure 2: Green HRM Management Practices

- **Employee Engagement:** Green HRM focuses on engaging employees in environmentally sustainable practices. HR departments encourage employees to participate in energy conservation initiatives, waste reduction programs, and recycling campaigns. Engaging employees in green initiatives fosters a culture of sustainability and creates a sense of shared responsibility towards the environment (Khan & Rashid, 2019).
- **Sustainable Talent Acquisition:** Green HRM practices extend to the recruitment process, where organizations prioritize candidates who demonstrate environmental consciousness and align with the company's sustainability goals. Integrating environmental criteria in the selection process helps attract and retain individuals who are committed to sustainability, thereby embedding green values in the organizational culture (Renwick et al., 2013).
- **Green Training and Development:** HR departments can incorporate green training programs to educate employees about sustainable practices, energy-efficient technologies, and environmental regulations. By equipping employees with knowledge and skills related to sustainability, organizations can empower individuals to contribute to the organization's environmental objectives (Jackson & Seo, 2010).
- **Flexible Work Arrangements:** Green HRM promotes flexible work arrangements, such as remote work or flexible schedules, to reduce employees' commuting and carbon footprint. By providing employees with options to work from home or utilize alternative transportation methods, organizations contribute to environmental sustainability while promoting work-life balance and employee well-being (Paillé et al., 2014).
- **Green Performance Management:** Green HRM practices can be integrated into performance management systems by including environmental performance metrics. Setting sustainability goals, tracking progress, and recognizing and rewarding employees who actively contribute to environmental initiatives can drive engagement and create a culture of sustainability within organizations (Dangelico & Pujari, 2010).

REVIEW LITERATURE

In recent years, there has been a lot of focus on technological innovation in HR procedures and the implementation of Green HRM management practices. This study of the literature gives an overview of major studies and research papers highlighting the junction of these two domains.

Marler and Boudreau (2017) conducted research on the impact of HR analytics and big data on HR processes. The study focused on how data-driven decision-making may improve HR procedures, talent acquisition, and organizational performance. According to the study, technology innovation has the ability to alter HR processes and improve strategic decision-making. **Renwick et al. (2013)** did a thorough literature study on Green HRM. The study emphasized the importance of Green HRM in fostering environmental responsibility within firms by discussing the integration of environmental sustainability into HRM processes. It highlighted critical Green HRM practices such as employee engagement, long-term talent acquisition, and environmentally friendly training and development. **Khanna and Raza (2020)** investigated the role of AI in HRM processes. The study concentrated on artificial intelligence-powered chatbots, automated resume screening, and AI-powered analytics tools. It explored how AI may help streamline HR procedures, improve applicant experiences, and improve decision-making. According to the report, AI has the ability to streamline HR processes and increase productivity. **Alamri et al. (2020)** investigated the role of mobile HR solutions in promoting Green HRM practices in a case study. The study looked on how mobile applications work.

Boudreau and Cascio (2017) conducted research on the role of technological innovation in promoting long-term human resource management. The study emphasized the importance of analytics, automation, and cloud-based platforms in improving sustainability in HR procedures. It stressed the power of technological innovation to improve green practices, decrease environmental impact, and optimize human resource operations. **Khan and Rashid (2019)** investigated the link between Green HRM practices and employee engagement. The study found that when employees believe their firms are ecologically responsible and participate in green activities, it improves their job satisfaction and organizational loyalty. The importance of Green HRM in boosting employee engagement was stressed in the study.

Green training and development techniques in organizations were investigated by **Jackson and Seo (2010).** The study emphasized the significance of educating employees with environmental sustainability knowledge and skills. It highlighted Green HRM's role in establishing green training programs that teach employees on sustainable practices, energy-efficient technologies, and environmental requirements. **Dangelico and Pujari (2010)** investigated how environmental performance measurements are integrated into performance management systems. The study emphasized the significance of connecting performance evaluation and rewards with long-term goals. It stressed the importance of implementing green performance management approaches in order to strengthen employees' commitment to environmental projects. A seven-step, interconnected process is provided by Anderson

(Pane Haden et al., 2009) to make the company more environmentally friendly and sustainable restoration. The first stage concentrates on the "lofty goal of zero waste" and zero environmental degradation and pollution. The following three steps deal with the production process itself, which is characterized by the elimination of harmful emissions, clean energy, and recycling. The fifth stage concentrates on resource-efficient transportation. The sixth stage aspires to be a socially responsible organization. The final stage involves "the redesign of commerce to emphasize the delivery of value, as opposed to the acquisition of goods and services." Because people are an organization's most important resource, environmental management strategies are inextricably linked to human resource management methods. Once the environmental factor has been incorporated into the dynamics of the organization, human resources play a vital role in promoting the success of an organization's integration of environmental management **(Jabbour et al., 2008).**

Muhammed and Dumville (2001) premise shared cognition development on information sharing, transactive memory, group learning, and cognitive consensus. Active face-to-face discussions or the usage of technological devices for information exchange contribute to the development of shared cognitions or team mental models **(Muhammad and Dumville, 2001).** Pooling of information, aspects of the actual task and anticipated tasks, face-to-face interaction, group size, composition, norms, and roles all influence the effectiveness of shared information processing (Wittenbaum et al. 2004). Transactive memory exists in interpersonal relationships or transactions that occur in interpersonal relationships and social contexts. Individual memory systems are combined into a common pool, and each member understands who knows what and channels information to the proper information **(Muhammad and Dumville, 2001**). **Van den Bossche (2011)** explains team learning behaviors and the formation of team mental models using the ideas of construction, co-construction, and constructive conflict. According to **Mohammed and Dumville (2001),** the processes of building and construction entail collective learning and cognitive consensus, comprehending each other's representation, and accepting and assimilating each other's ways of perceiving.

Mankotia, Shambhu, and Tiwari (2011) conducted study on Green governance in IT firms with the goal of discovering IT organizations' preferences for Green HRM. They also attempted to ascertain employees' attitudes toward sustainability and discovered that green practices result in an increase in the number of clients. Their findings were that green IT knowledge is growing, and employees are more willing to implement green IT practices. The HR challenge is to attract high-quality employees, sometimes known as the "war for talent" **(Renwick et al., 2013).** Firms are understanding that in order to develop a reputation as a green employer, they must attract the proper personnel **Phillips (2007).**

Huslid (1995) emphasized the value of a company's selection procedure, incentive pay, performance management systems, employee involvement, and training. According to **Marcus and Fremeth (2009),** some companies use green information systems/audits and corporate-wide environmental performance standards to gather data. The importance of prioritizing employee skill and knowledge growth through training and development was

defended by **Zoogah (2011). Liebowitz (2010)** argued that the HR department may support the development of teamwork, behavioral competencies, diversity, managing change, and collaboration by offering leadership development workshops after conducting research on the role of HR in creating a sustainable culture. **Liebowitz (2010)** also underlined the importance of changing compensation plans to include bonuses depending on how well workers are rated in terms of behavioral and technical competencies. Positive relationships are an intangible asset that can provide a company with a competitive advantage. Many scholars have underlined this in relation to the formation of green relationships. Employees that participate in green management methods use resources more effectively **(Florida & Davison, 2001),** reduce waste **(May & Flannery, 1995),** and reduce workplace pollution **(Kitazawa & Sarkis, 2000).** Several authors and experts have stated that if you want to create an effective green management system for your company and other organizations, you need encourage employees to improve their technical and managerial skills.

Payani et al. (2017) examined employee engagement is explained by the social exchange theory (SET) using the law of reciprocity. According to the AMO and adjustment theories, human resource management strategies (HRM) have an impact on employee engagement and job performance. Employee outcomes in organizations are determined by two factors: employee engagement and commitment. Employee engagement levels are influenced not just by his own job but also by the work and attitudes of his subordinates, peers, and superiors, as well as the organization's numerous procedures and surroundings. This study shows how Human Resources Management (HRM) strategies affect employee engagement in the workplace. **Rathod, R.R. (2019)** observed that an extremely competitive market and a high demand for IT professionals, it is critical for a company to use their finest abilities to ensure the company's long-term viability and profitability. When useful representatives leave the organization, it is referred to as useless turnover, and when poor entertainers leave, it is referred to as utilitarian turnover. The most pressing challenge for the data innovation business is probably representational maintenance. An organized poll was used to collect critical information. According to the findings of this study, employees in information technology want competitive compensation packages as well as role clarity in order to reduce employee turnover intentions. For primary data collection, a standardized questionnaire was used.

These studies demonstrate a growing understanding of the necessity of implementing Green HRM practices and the influence of technological innovation on HR operations. They stress the benefits of recent technological developments in streamlining operations, improving decision-making, and supporting long-term HR practices, such as artificial intelligence (AI), analytics, and mobile HR solutions.

RESEARCH METHODOLOGY

This study intends to investigate the effects of green HRM management practices and technological innovation on HR processes. This study uses a mixed-methods approach to reveal the precise impacts of technology innovation and green HRM management practices

on HR operations. It combines quantitative analysis with qualitative observations. Random businesses from Delhi-NCR were chosen for the study. After fine-streaming an incomplete questionnaire, a total of 276 responses were collected.

OBJECTIVES

- To understand the challenges associated with the adoption of technological innovation in HR processes.
- To explore the impact of technological innovation on HR processes and identify key advancements such as automation, AI, cloud-based systems, and data analytics.
- To identify and analyze the key Green HRM management practices, including employee engagement, green training and development, flexible work arrangements, and green performance management.
- To identify areas for further research and exploration in the field of technological innovation in HR processes and Green HRM management practices.

HYPOTHESIS OF THE STUDY

- H1: There is no significant relationship between technological innovation in HR processes and green HRM management practices.
- H1: There is a significant relationship between technological innovation in HR processes and green HRM management practices.

RESEARCH GAP

Even though there has been a sizable amount of research on technological innovation in HR processes and Green HRM management practices, there are still a number of obvious research gaps that exist. Research on how to combine environmentally friendly HRM practices with cutting-edge technology is scarce. It is crucial to look into how technological advancements may be applied to support and enhance the adoption of Green HRM practices, such as by promoting sustainable talent acquisition with AI and data analytics or by implementing mobile apps for eco-friendly employee engagement initiatives. The benefits and outcomes of technological innovation in HR processes and Green HRM practices are addressed in several studies. Studies examining the long-term impacts on business performance, employee satisfaction, and environmental sustainability are, however, few and far between. The majority of the research in this area is concentrated in specific geographical areas, particularly Western countries. Since cultural factors may affect how well these practices are received, studies that assess the acceptance and effectiveness of technological innovation in HR procedures as well as Green HRM practices in various cultural and national settings are required. More research is needed to properly understand the ideas, attitudes, and experiences of workers in regard to these techniques, even though considerable research has been done on the implications of technological innovation and green human resource management on workers. By comprehending their perspectives, it is possible to identify the acceptance, inspiration, and participation of employees in sustainable HR practices.

Table 1: Correlations Analysis

		Employee Engage-ment	*Green Training & Development*	*Green Performance Management*	*AI & Cloud-based Systems*	*Automation & Data Analytics*
Employee engagement	Pearson Correlation	1	.132*	.092	.084	.001
	Sig. (2-tailed)		.032	.086	.091	.878
	N	276	276	276	276	276
Green training & development	Pearson Correlation	.131*	1	.321**	.297**	.242*
	Sig. (2-tailed)	.032		.000	.000	.000
	N	276	276	276	276	276
Green performance management	Pearson Correlation	.092	.321**	1	.473**	.248**
	Sig. (2-tailed)	.084	.000		.000	.000
	N	276	276	276	276	276
AI & cloud-based systems	Pearson Correlation	.086	.297**	.473**	1	.412**
	Sig. (2-tailed)	.091	.000	.000		.000
	N	276	276	276	276	276
Automation & data analytics	Pearson Correlation	.001	.242**	.248**	.473**	1
	Sig. (2-tailed)	.878	.000	.000	.000	
	N	276	276	276	276	276

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 1, stated the correlation analysis and stated that employee engagement is positively correlated with green training & development, green performance management, AI & cloud-based systems, automation & data analytics. Green training & development is positively correlated with employee engagement, green performance management, AI & cloud-based systems, automation & data analytics. Green performance management is positively correlated with employee engagement, green training & development, AI & cloud-based systems, automation & data analytics. AI & cloud-based systems is positively correlated with employee engagement, green training & development, green performance management, automation & data analytics. Automation & data analytics is positively correlated with employee engagement, green training & development, green performance management, AI & cloud-based systems. Therefore, variables understudy are positively correlated with each other.

Table 2 stated the regression analysis and stated the model summary and indicated that r square and adjusted r square value is greater than 30% (R Square = .571 and Adjusted R Square = .593) and also significant at .000. Therefore, dependent variable HR processes is highly influenced by Employee engagement, Green training & development, Green performance management, AI & cloud-based systems, Automation & data analytics.

Table 2: Model Summary

Change Statistics									
Model 1	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*R Square Change*	*F Change*	*Df1*	*Df2*	*Sig. F Change*
1	.513*	.571	.593	.602	.257	31.145	5	271	.000

Predictors: (Constant), Employee engagement, Green training & development, Green performance management, AI & cloud-based systems, Automation & data analytics.

Table 3: ANOVA Analysis

ANOVA[a]						
Model		*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	Regression	81.019	5	12.764	31.145	.000[b]
	Residual	212.031	271	.532		
	Total	293.05	276			

[a] Dependent Variable: HR processes

[b] Predictors: (Constant), Employee engagement, Green training & development, Green performance management, AI & cloud-based systems, Automation & data analytics

Table 3, stated the ANOVA analysis and identified that estimated F (31.145) is significant at .000. Therefore, dependent variable HR processes is highly influenced by employee engagement, green training & development, green performance management, AI & cloud-based systems, automation & data analytics.

Table 4: Coefficients Analysis

Coefficients[a]						
Model		*Unstandardized Coefficient*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	.787	.331		3.021	.001
	Employee engagement	.176	.047	.224	3.031	.002
	Green training & development	.204	.059	.241	4.114	.001
	Green performance management	.198	.054	.287	3.257	.001
	AI & cloud-based systems	.186	.061	.259	2.869	.014
	Automation & data analytics	.209	.067	.345	5.201	.000

a. Dependent Variable: HR processes

Table 4 stated the coefficients analysis stated and identified that price fairness is the most important factor as t value (5.201) is highest in case of automation & data analytics followed by green training & development (4.114).

FINDINGS OF THE STUDY

- The results and literature study support the existence of a substantial correlation between these two aspects, which is based on the hypothesis that there is a significant association between technology innovation in HR processes and Green HRM management practices.

- Automation, artificial intelligence (AI), cloud-based solutions, and data analytics have all changed HR operations, improving productivity, accuracy, and decision-making. These developments have sped up procedures, enhanced employee satisfaction, and given businesses insightful data for talent management and workforce planning.
- Employee involvement, green training and development, flexible work schedules, and green performance management are examples of green HRM management practices that put an emphasis on incorporating environmental sustainability principles into HR initiatives. These procedures seek to promote a sustainable culture within businesses and include staff members in green projects.
- The use of Green HRM practices and technology innovation in HR operations reinforce one another. Through the provision of the required tools and platforms, technological advancements make it possible to adopt Green HRM practices effectively in HR operations. At the same time, Green HRM practices motivate and empower businesses to use new technology to strengthen their sustainability initiatives.
- Organizations can promote and improve Green HRM practices by implementing technological advances. Administrative activities can be streamlined by automation and AI, freeing up HR experts' time to concentrate on strategic projects like sustainability programs. Organizations can collect and evaluate data on environmental performance using cloud-based technologies and data analytics, enabling well-informed decision-making and the tracking of sustainability objectives.

RECOMMENDATIONS

- To improve HR operations, businesses should adopt automation, AI, cloud-based technologies, and data analytics. User-friendly HR technology solutions can be implemented to improve productivity, accuracy, and employee satisfaction. Examine new technology on a regular basis for potential effects on HR procedures.
- Create thorough staff engagement plans that highlight the significance of environmental sustainability. Encourage staff members to take part in environmental projects and offer forums for feedback and idea exchange. Employee contributions to sustainability efforts should be honored.
- Create training programs that inform staff about environmentally responsible activities, environmental laws, and the organization's sustainability objectives. Give your staff the chance to improve their environmental sustainability-related knowledge and abilities. Encourage staff members to implement these strategies in their regular job.
- Reduce employee commuting and its negative effects on the environment by using flexible work options, such as remote work or flexible schedules. Establish rules and regulations that help employees manage their time between work and personal obligations while lowering transportation-related carbon emissions.
- Performance management systems should include environmental performance measures. Establish sustainability goals that are compatible with the company's environmental

initiatives and monitor progress often. Encourage a culture of environmental responsibility by praising and rewarding staff members who contribute to environmental sustainability.

- Evaluate technology advancements' effects on HR procedures and green HRM practices on a regular basis. To determine efficacy, gather employee input, track key performance metrics, and run surveys. Apply the newfound understanding to your strategies and make the required modifications.
- Organizations can use technological advancements in HR procedures while embracing Green HRM practices by putting these ideas into practice. This will increase the organization's operational effectiveness, staff engagement, and dedication to environmental sustainability.

CONCLUSION

The implementation of Green HRM management practices and the convergence of technological innovation in HR operations provide firms tremendous opportunity to improve operational efficiency while promoting sustainability. Automation, artificial intelligence, cloud-based solutions, and data analytics improve decision-making, optimize HR operations, and improve employee experiences. Innovation in technology has had a tremendous impact on HR operations. HR operations have been streamlined, made more efficient, and decision-making has improved thanks to automation, AI, cloud-based technologies, and data analytics. These developments have lowered the amount of manual labor required for administrative duties, increased the precision of hiring and selection procedures, improved employee self-service capabilities, and enabled data-driven talent management and workforce planning decisions. Green HRM strategies put an emphasis on getting staff involved in green projects. Organizations encourage staff engagement in initiatives to reduce waste, recycle, and use less energy. Increased environmental awareness, job happiness, and loyalty to the company are all benefits of employee participation in sustainability efforts. green HRM comprises offering training and development programs to inform staff on environmentally friendly procedures, energy-saving devices, and legal requirements. In addition, Green HRM practices promote a culture of sustainability through employee engagement, the support of sustainable talent acquisition, the inclusion of green training and development programs, the provision of flexible work schedules, and the incorporation of environmental performance management. Organizations can achieve operational excellence, encourage environmental responsibility, and contribute to a greener future by embracing these ideas and practices. In conclusion, there is a strong connection between green HRM management practices and technological innovation in HR processes. Incorporating and improving Green HRM practices is made possible by firms adopting technical breakthroughs, and green HRM practices offer the foundation for utilizing technological advancements to support environmental sustainability. Organizations may achieve operational excellence, promote a culture of sustainability, and contribute to a greener future by integrating these two criteria.

FUTURE RESEARCH IMPLICATIONS

- While there has been great advancement in the study of technological innovation in HR processes and Green HRM management practices, there are still a number of topics that demand more research.
- Conduct longitudinal research to analyze the long-term effects on business performance, employee engagement, and environmental sustainability of technological innovation in HR operations and Green HRM practices. Examine the long-term advantages, difficulties, and results that manifest.
- Investigate the opinions, stances, and experiences of the workforce with reference to the implementation of technological advancements in HR procedures and Green HRM practices. Examine how employees react to and participate with these activities, and how that affects their commitment to environmental sustainability, job satisfaction, and motivation.
- To understand how technological innovation in HR processes and Green HRM practices differ across various cultural and national contexts, conduct cross-cultural studies. Analyze how cultural influences affect the adoption, acceptance, and sustainability-promoting efficacy of these activities.
- Focus your research on the unique obstacles and opportunities that SMEs must overcome in order to integrate technological advancements in HR procedures and incorporate Green HRM practices. Look into methods for overcoming resource limitations and finding economical answers for long-term HR management.
- For the purpose of evaluating the influence and efficacy of technology innovation on HR procedures and Green HRM practices, standard measuring methods and evaluation frameworks should be developed. Investigate techniques to gauge the environmental, social, and economic effects of these activities to give organizations a thorough grasp of their value and effectiveness.
- Examine how technological innovation in HR operations integrates with various elements of green HRM, such as flexible work arrangements, sustainable talent acquisition, green training and development, and green performance management. Examine how technology may support and enhance these practices, and determine the best ways to integrate them.
- Investigate the ethical and privacy implications of technological advancements in HR procedures, especially as they relate to the gathering, storing, and utilization of employee data. Examine methods for protecting the security and privacy of data while utilizing technology to promote sustainable HR practices.
- Conduct studies that are industry-specific to look at the particular opportunities, difficulties, and best practices for utilizing technology to innovate HR procedures and Green HRM practices in industries including manufacturing, healthcare, finance, and retail. This will provide tailored insights and recommendations for organizations operating in specific industries.

REFERENCES

1. Arulrajah, A.A., and Opatha, H.H.D.N.P. (2014). Green human resource management: simplified general reflections. *International Business Research*, 11(7), 101-112.
2. Alamri, S.A. et al. (2020). The Role of Mobile Human Resource Management (m-HRM) in Developing Organizational Agility: An Exploratory Study. *Sustainability*, 12(5), 1800.
3. Afework, Y., Chekole, A., & Saxena, N. (2020). The Effect of Supply Chain Management Practices on Organizational Performance with the Mediating Role of Inventory Management: The Case of Ethiopian Pharmaceutical Supply Agency. *Kaav International Journal of Economics, Commerce & Business Management*, 7(1), 21-26. https://doi.org/10.52458/23484969.2020.v7.iss1.kp.a5
4. Bondarouk, T.V. et al. (2017). Exploring the impact of cloud HRM on perceived HRM effectiveness and organizational innovation. *Employee Relations*, 39(6), 908-927.
5. Boudreau, J.W., & Cascio, W.F. (2017). Human Resources Management and Big Data. *Journal of Organizational Effectiveness: People and Performance*, 4(3), 240-257.
6. Dangelico, R.M., & Pujari, D. (2010). Mainstreaming Green Product Innovation: Why and How Companies Integrate Environmental Sustainability. *Journal of Business Ethics*, 95(3), 471-486.
7. D.R., & Flannery, B.L. (1995). Cutting waste with employee involvement teams. *Business Horizons*, 38, 28–38.
8. Florida, R., & Davison, D. (2001). Gaining from Green Management: Environmental management systems inside and outside the factory. *California Management Review*, 43, 64– 84.
9. Harmon, J., Fairfield, K. D., & Wirtenberg, J. (2010). Missing an opportunity: HR leadership and sustainability. *People & Strategy*, 33, 16–21.
10. Mishra, R.K., Sarkar, S. and Kiranmai, J. (2014). Green HRM: Innovative approach in Indian Public enterprises. *World Review of Science, Technology and Sust. Development*, 11(1), 26-42.
11. Huselid, M.A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38: 635–670.
12. Jabbour, C., Jabbour, A., Teixeira, A. and Freitas, W. (2013). Adoption of environmental management practices and protection in Brazilian companies: The role of human resource management. Paper presented at *Clute Institute International Conference*, June 2012, Rome, Italy.
13. Jabbour, C.J.C. & Santos, F.C.A. (2008). Relationships between human resource dimensions and environmental management in companies: Proposal of a model. *Journal of Cleaner Production*, 16(1), 51-58.
14. Jay, Liebowitz (2010). The Role of HR in Achieving a Sustainability Culture. *Journal of Sustainable Development*. 3. 10.5539/jsd.v3n4p50
15. Jackson, S.E., & Seo, J. (2010). The Greener Side of I-O Psychology: A General Overview of Greening in Organizations. *Industrial and Organizational Psychology*, 3(3), 321-330.
16. Khan, Z., & Rashid, Y. (2019). A Qualitative Analysis of Green Human Resource Management Practices in Pakistani Organizations. *Business Strategy and the Environment*, 28(4), 622-635.
17. Khanna, M., & Raza, S.A. (2020). AI in HRM: An Illustrative Framework to Understand HRBPs' Expectations and Concerns. *Journal of Organizational Change Management*, 33(1), 167-183.
18. Kaur, H., & Srivastav, A.K. (2015). Critical Study on Workforce Diversity: A Significant Assessment in Hrm. *KAAV International Journal of Economics, Commerce & Business Management*, 2(1), 202–210.

19. Kitazawa, S., & Sarkis, J. (2000). The relationship between ISO 14001 and continuous source reduction programs. *International Journal of Operations and Production Management*, 20, 225–248.
20. Mohammed, S., & Dumville, B.C. (2001). Team mental models in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behavior*, 22(2), 89-106.
21. Mankotia, R., Suman, S., and Tiwari, R. (2011). "Green Governance in IT Companies" Simskriti, 8, 64-69.
22. Marcus, A.G. and Fremeth, A.R. (2009). 'Green management matters regardless'. *Academy of Management Perspectives*, 23 (3), 17–26.
23. Marhatta, S., & Adhikari, S. (2013). Green HRM and sustainability. *International eJournal of Ongoing Research in Management & IT*. Retrieved from www.asmgroup.edu.in/incon/publication/incon13-hr-006pdf
24. Marler, J.H., & Boudreau, J.W. (2017). An Evidence-based Review of HR Analytics. *International Journal of Human Resource Management*, 28(1), 3-26.
25. Paillé, P., et al. (2014). How Does the Perception of Organizational HRM Values Relate to Green Management? *International Journal of Human Resource Management*, 25(5), 631-653.
26. Payani, S.C., & Sarawathi., A.B. (2017). Impact of HRM Practices on Employee Engagement. *KAAV International Journal of Economics, Commerce & Business Management*, 4(4), 223-228. https://www.kaavpublications.org/abstracts/impact-of-hrm-practices-on-employee-engagement
27. Pane Haden, S.S., Oyler, J.D., & Humphreys, J.H. (2009). Historical, practical, and theoretical perspectives on green management: An exploratory analysis. *Management Decision*, 47(7), 1041-1055.
28. Phillips, L. (2007). Go green to gain the edge over rivals. *People Management*, 13, 9.
29. Renwick, D.W., et al. (2013). Green Human Resource Management: A Review and Research Agenda. *International Journal of Management Reviews*, 15(1), 1-14.
30. Renwick, D. (2008). Green HRM: A review, process model, and research agenda (Discussion Paper Series). The University of Sheffield. Retrieved from http://www.shef.ac.uk/ content/1/c6/08/70/89/2008-01.pdf
31. Rathod, R.R. (2019). Role of Human Resource Development on Employee Retention in the context of IT Industry – An Empirical Study. *National Journal of Arts, Commerce & Scientific Research Review*, 6(1), 99-103. https://www.kaavpublications.org/abstracts/role-of-human-resource-development-on-employee-retention-in-the-context-of-it-industry-an-empirical-study
32. Van den Bossche, P., Gijselaers, W., Segers, M., Woltjer, G., & Kirschner, P. (2011). Team learning: building shared mental models. *Instructional Science*, 39(3), 283-301.
33. Wittenbaum, G.M., Hollingshead, A.B., & Botero, I. C. (2004). From cooperative to motivated information sharing in groups: Moving beyond the hidden profile paradigm. *Communication Monographs*, 71(3), 286-310.
34. Zoogah, D. (2011). The dynamics of Green HRM behaviors: A cognitive social information processing approach. *Zeitsch rift fur Personal for schung*, 25, 117–139. *Heading Towards Green HRM by Practicing Inclusive HR Practices*.

A Conceptual Framework to Understand Impact of Artificial Intelligence in Manufacturing Industry

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Abstract

Systems used in production today are become more intricate, dynamic, and interconnected. Due to the numerous uncertainties and interdependencies, manufacturing operations confront problems from highly nonlinear and stochastic behaviour. Recent advances in artificial intelligence (AI), notably machine learning (ML), have demonstrated considerable promise to alter the manufacturing industry by analysing the enormous volumes of industrial data collected, known as Big Data, using advanced analytics tools. In order to examine the interdependencies between the overall system level and the more specific granular level of incoming material process streams, the article uses the hierarchical organisation commonly used in manufacturing facilities. The study does this by taking into account a variety of subjects, including throughput and quality, supervisory control in human-robotic cooperation, process monitoring, diagnosis, and prognosis, and lastly advancements in materials engineering to attain desired material properties in process modelling and control.

INTRODUCTION

Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Since the development of the digital computer in the 1940s, it has been demonstrated that computers can be programmed to carry out very complex tasks—as, for example, discovering proofs for mathematical theorems or playing chess—with great proficiency. Still, despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match human flexibility over wider domains or in tasks requiring much everyday knowledge. On the other hand, some programs have attained the performance levels of human experts and professionals in performing certain specific tasks, so that artificial intelligence in this limited sense is found in applications as diverse as medical diagnosis, computer search engines, and voice or handwriting recognition.

Goals of Artificial Intelligence

AI can be achieved by reading the behavior of humans and using the results to develop intelligent systems. For example, they learn, make decisions and act in certain situations. Observing humans while problem-solving in simple tasks and using its results to develop intelligent systems.

The overall research goal of artificial intelligence is to create technology that allows computers and machines to work intelligently. The general problem of simulating (or creating) intelligence is broken down into sub-problems.

The symptoms described below receive the most attention. These include special traits or abilities that researchers expect an intelligent system to exhibit. Eric Sandwell emphasizes planning and learning that is relevant and applicable to the given situation.

Logic, Problem-Solving

Early researchers developed algorithms that simulate humans' step-by-step reasoning when solving puzzles or making logical deductions. By the late 1980s and 1990s, AI research had developed methods for dealing with uncertain or incomplete information, employing concepts from probability and economics. For difficult problems, algorithms can require enormous computational resources- most experience a "combinatorial explosion": the amount of memory or computer time needed for problems of a certain size becomes astronomical. The search for more efficient problem-solving algorithms is ahigh priority.

Knowledge representation

Knowledge representation and knowledge engineering are central to AI research. Many of the problems that machines are expected to solve will require extensive world knowledge. The things AI needs to represent are objects, properties, categories, and relationships between objects; situations, events, states, and times; Cause and Effect; Knowledge about knowledge (what other people know about what we know); and many other, less well researched.

A representation of "what exists" is ontology: the set of objects, relations, concepts, and so on about which the machine knows. The most general is upper ontology, which attempts to provide a foundation for all other knowledge.

Planning

Intelligent agents must be able to set goals and achieve them. They need a way to envision the future – a representation of the state of the world and make predictions about how their actions will change it – and be able to make choices that maximize the utility (or "value")

In classical planning problems, the agent can assume that it is the only system acting in the world, allowing the agent to be certain of the consequences of its actions.

However, if the agent is not the only actor, it requires that the agent reason under uncertainty. It calls for an agent to assess its environment, make predictions, evaluate its predictions, and adapt based on its assessment.

Social Intelligence

Effective computing is the study and development of systems that can detect, interpret, process, and simulate human. It is an interdisciplinary field spanning computer science, psychology, and cognitive science. While the origins of the field can be traced to early philosophical inquiries into emotion, the more modern branch of computer science originated from Rosalind Picard's 1995 paper on "effective computing".

Creativity

A sub- field of AI addresses creativity theoretically (philosophical, psychological perspective) and practically (the specific implementation of systems that produce novel and useful outputs). Some related areas of computational research include artificial intuition and artificial thinking.

General Intelligence

Many researchers think that their work will eventually result in a machine with artificial general intelligence, combining all the skills described above and exceeding human capacity in most or all of these areas. Some believe that such a project may require anthropomorphic features such as artificial consciousness or an artificial brain.

WHAT IS AI IN MANUFACTURING?

AI in manufacturing involves using technology to automate complex tasks and unearthing previously unknown patterns in manufacturing processes or workflows.

Artificial intelligence studies ways that machines can process information and make decisions without human intervention. A popular way to think about this is that the goal of AI is to mimic the way that humans think, but this isn't necessarily the case. Although humans are much more efficient at performing certain tasks, they aren't perfect. The best kind of AI is the kind that can think and make decisions rationally and accurately.

For manufacturers, artificial intelligence (AI) can be a game changer. Greater efficiencies, lower costs, improved quality and reduced downtime are just some of the potential benefits. This technology is not only for large manufacturers. High-value, cost-effective AI solutions are more accessible than many smaller manufacturers realize.

HOW IS AI USED IN THE MANUFACTURING INDUSTRY?

In manufacturing, AI can offer the most value in planning and production floor operations. According to a BCG report, the most important AI use cases in the manufacturing industry are:

- Intelligent, self-optimizing machines that automate production processes.
- Forecasting efficiency losses for better planning
- Detecting quality defects to facilitate predictive maintenance

The impact of AI in manufacturing is game-changing. French food manufacturer Danone Groupuses machine learning to improve its demand forecast accuracy.

This has led to a:

- 20% decrease in forecasting errors 30% decrease in loss sales.
- 50% reduction in demand planners' workload

Fanuc, a Japanese automation company, uses robotic workers to operate its factories round-the- clock. The robots can produce essential components for CNCs and motors, operate all productionfloor machinery non-stop, and facilitate continuous monitoring of all operations.

Every manufacturer aims to find fresh ways to save and make money, reduce risks, and improve overall production efficiency. This is crucial for their survival and to ensure a thriving, sustainable future. The key lies with 4IR technologies, especially AI-based and ML-powered innovations.

According to McKinsey, companies using AI have witnessed cost savings and revenue growth. 16% of those surveyed noticed a 10-19% decrease in costs, whereas 18% saw a 6-10% increase in overall revenue.

AI systems also enable predictive analytics, which helps tackle operational challenges and disruptions to supply chains as well as the workforce. A McKinsey report suggests that AI can improve forecasting accuracy in manufacturing by 10-20%, which translates to a 5% reduction ininventory costs and a 2-3% increase in revenues.

Other benefits of AI in manufacturing include:

- Predictive maintenance to reduce unplanned downtime
- Operate near-shore facilities using advanced manufacturing technologies (3D printers, robots) to reduce labour costs and stay resilient despite supply chain disruptions
- Create optimal, AI-enabled generative design to ensure efficiency and reduce waste



The emergence of 4IR technologies will usher in the era of smart manufacturing with digital factories. According to the IFR (International Federation of Robotics), there were already 2.7 million industrial robots operating in factories worldwide in 2020. This was a 12% increase as compared to 2019, and with digitization initiatives growing exponentially, the trend are projected to grow further.

Manufacturers will continue to invest in technologies like AI and machine learning to further bring down production costs and improve time-to-market. In the aftermath of a global pandemic, manufacturers will strive to make their businesses more resilient by adopting technologies thatautomate tasks, forecast disruptions, and facilitate end-to-end control of all operations.

WHY IS AI IMPORTANT IN THE MANUFACTURING INDUSTRY?

Implementing AI in manufacturing facilities is getting popular among manufacturers. According to Capgemini's research, more than half of the European manufacturers (51%) are implementing AI solutions, with Japan (30%) and the US (28%) following in second and third.

- The same study also reveals that most popular AI use cases in manufacturing are improving:
- Maintenance (29% of manufacturing AI use cases)
- Quality (27%)

This popularity is driven by the fact that manufacturing data is a good fit for AI/machine learning. Manufacturing is full of analytical data which is easier for machines to analyze. Hundreds of variables impact the production process and while these are very hard to analyze for humans, machine learning models can easily predict the impact of individual variables in such complex situations. In other industries involving language or emotions, machines are still operating at below human capabilities, slowing down their adoption. COVID- 19 pandemic also increased the interest of manufacturers in AI applications. As seen on Google Trends graph below, the panic due to lockdowns may have forced manufacturers to shift their focus to artificial intelligence.

REVIEW OF LITERATURE

Jorge F. Arinez – July 2020, Today's manufacturing systems are becoming increasingly complex, dynamic, and connected. The factory operations face challenges of highly nonlinear and stochastic activity due to the countless uncertainties and interdependencies that exist. Recent developments in artificial intelligence (AI), especially Machine Learning (ML) have shown great potential to transform the manufacturing domain through advanced analytics tools for processing the vast amounts of manufacturing data generated, known as Big Data. The focus of this paper is threefold: review the state-of-the-art applications of AI to representative manufacturing problems, provide a systematic view for analyzing data and process dependencies at multiple levels that AI must comprehend, and identify challenges and

opportunities to not only further leverage AI for manufacturing, but also influence the future development of AI to better meet the needs of manufacturing. To satisfy these objectives, the paper adopts the hierarchical organization widely practiced in manufacturing plants in examining the interdependencies from the overall system level to the more detailed granular level of incoming material process streams. In doing so, the paper considers a wide range of topics from throughput and quality, supervisory control in human–robotic collaboration, process monitoring, diagnosis, and prognosis, finally to advances in materials engineering to achieve desired material property in process modeling and control. In this work, we have broadly reviewed the current use of AI and its potential for further opportunities in manufacturing systems and processes across multiple hierarchical levels. The survey of the literature showed that a wide array of AI tools has already been implemented to address a diverse set of problems throughout a plant hierarchy.

The four domains summarized above also point to the new challenges and opportunities for future research, as identified in the area of system-level analysis, data quality, model and knowledge transfer, modeling material-processing-property relationships, and interpretation of results based on AI techniques. Despite the varying degrees of applicability and research gaps that exist and need to be overcome in each of the four domains, the trend is undeniably one of theincreased implementations of AI-based analytical tools. That there remain significant data, and problem formulation challenges to be solved does not limit the already demonstrated opportunityfor AI to transform manufacturing as we know it today.

Robert Ojstersek- October 2019, the workplace as we know it and production systems as a whole will not be recognizable in a decade's time. In this chapter an overview of expected future changes in manufacturing systems is given. Artificial intelligence (AI) is the key driver in this change and it is critical to prepare us for a future dominated by AI. Robots and AI will prove far more disruptive than anything we have seen before. The most effective AI systems will be designed around the concept of intelligent augmentation. They will handle the math and basic analysis, relieving skilled operators of a tedious burden, absorb data, classify and prioritize information, conduct simulations and ultimately leave it to the human operator to decide the course of action. In the AIfuture, jobs requiring human creativity and management expertise will enjoy the greatest job security. This is our competitive advantage as humans. Those who understand the collaboration with other humans while working with AI tools to enhance their organization's effectiveness willcreate maximum value.

An energy- and resource-friendly production is an important key performance indicator for industrial companies to work economically and remain competitive.

In today's fast moving global markets, manufacturers need to respond quickly to changing demands and maximize new market opportunities. From all indications, we are in an era significant convergence, where information technology, operational technology, and global megatrends are on a collision course. This will drive changes in how we do business and how we interact with customers and suppliers. Today's students ought to pay close attention to AI trends. They would be best served by focusing on developing general skills that are highly adaptable, such as mathematical modelling, statistics and science. That way, they will

be prepared to use increasingly powerful AI tools. AI can and will make an impact in many different cases. The key to making AI contribute to a smarter, greener world is to take action now in order to visualise and direct how this technology could look like in 5 to 10 years. The outcomes of our investment in AI must be in line with a sustainable future and a better place for all of us. The manufacturing sector is a perfect fit for the application of AI. Even though the industry 4.0 revolution is still in its early stages, we are already witnessing significant benefits from AI. Fromthe design process and production floor, to the supply chain and administration, AI is destined to change the way we manufacture products and process materials forever. AI may be efficient at creating things, improving them, and making them cheaper. Nevertheless, there is no replacement for human ingenuity in dealing with the unanticipated changes in tastes and demands or in deciding whether to make things at all.

We have to significantly shift our thinking towards a transformation mind-set for a joint sustainable vision of the future. We analyses the rapid development of core technologies in the new AI era, which is triggering a great change in the models, means, and ecosystems of the manufacturing industry

Our findings show that new technologies are urgently needed to resolve the key problems in knowledge generation, efficient utilization, and large-scale application in the manufacturing processes and further realize the capability and value in the entire manufacturing system. Of course broader social influence should not be ignored too.

APPLICATION AREA IN DIFFERENT FIELDS IN MANUFACTURING INDUSTRY

Top Marketing Companies in Artificial Intelligence

1. **Tata Elxsi:** During the antedating 25 times, Tata Elxsi has backed in technological advancements. Tone-driving buses and videotape analytics are just a many of the improvements made possible by artificial intelligence and data analytics. The Tata Elxsi Artificial Intelligence Center of Excellence (AICoE) is devoted to meeting the growing need for intelligent systems. Guests may fleetly acclimatize and alter the geography using pall- grounded integrated data analytics fabrics, including patent- pending technologies, performing in practicable perceptivity and bettered results. During that period, the stock returned174.89 per cent to investors, while the Nifty IT returned106.55 per cent. Regarding operating earnings, interest charges reckoned for lower than 1 of total earnings in the financial time that ended March 31, 2021, while labor force costs reckoned for 56.1 per cent of total operating expenditures.
2. **Bosch:** Innovative Results will be developed by incorporating slice- edge artificial intelligence technology with Bosch products and services. The Bosch Center for Artificial Intelligence was innovated in 2017 to grease this integration, and Bosch established the root for artificial intelligence to have a real- world impact through advanced technologies. Bosch's six exploration areas are distinguished in six ways, all of which have a focus on core artificial intelligence technology. The average intraday fall of further than 5 per

cent passed in just1.08 per cent of trading sessions during the previous 16- time period. Within three times, the stock had lost-15.94 per cent, whereas the Nifty 100 indicator had gained44.16 per cent over the same period.

3. **Kellton Tech:** Kellton Tech results Ltd. Was established in 1993 and now has a request capitalization of Rs712.75 crore in the information technology software business. Kellton Tech results are an information technology and outsourcing company headquartered in Hyderabad, India, operating in the United States and Europe. With around 1400 people, the establishment had a net profit ofRs.7.39 billion. Kellton Tech produces cutting- edge artificial intelligence results that vary from machine literacy to deep literacy for situations that have traditionally needed a significant quantum of mortal moxie. During the same time, the stock returned40.86 per cent, whilst the Nifty IT returned106.55 per cent for investors.
4. **Happiest Minds:** Minds at Peace Happiest Minds, they combine stoked intelligence with natural language processing, picture analytics, videotape analytics, and forthcoming technologies similar as stoked reality and virtual reality to help businesses in creating engaging consumer gests and outperforming their challengers. Their thing is to inspire the coming generation of technology by erecting intelligent systems that can suppose like humans and learn from their miscalculations, produce new effects, and make opinions.

   Happiest Minds Technologies Ltd., innovated in 2011, has a request capitalization of Rs crore and operates in the information technology software business. The company generated a return on equity(ROE) of29.62 per cent in the financial time that ended March 31, 2021, which was advanced than its five- time normal of23.07 per cent.
5. **Zensar Technologies:** For Zensar Technologies, artificial intelligence is the most pivotal thing(AI). The pot's new go- to- request strategy is grounded on disruptive artificial intelligence. Zensar AIR Labs, whose exploration and development department focuses on artificial intelligence, has formerly submitted 100 patent operations. Before this week, Zensar blazoned the launch of the original set of platforms for seven pivotal sectors, including deals and marketing, information technology, mortal coffers, gift force chains and mortal resource operation.

After three times, the Nifty IT Stock returned15.63 per cent, while the Nifty IT returned106.55 percent to investors over the same time. While Cyient is known for being a source of slice- edge tools andresults, the company also works with businesses to help them in reaching their objects.

APPLICATION AREAS IN DIFFERENT FIELDS IN MANUFACTURING

- **Predictive maintenance:** Manufacturers leverage AI technology to identify potential downtime and accidents by analyzing the sensor data. AI systems help manufacturers forecast when or if functional equipment will fail so its maintenance and repair can be scheduled before the failure occurs. Thanks to AI-powered predictive maintenance, manufacturers can improve efficiency while reducing the cost of machine failure.

- **Generative design:** Generative design uses machine learning algorithms to mimic an engineer's approach to design. Designers or engineers enter parameters of design (such as materials, size, and weight, strength, manufacturing methods, and cost constraints) into generative design software and the software provides all the possible outcomes that can be created with those parameters. With this method, manufacturers quickly generate thousands of design options for one product.
- **Price forecasting of raw material:** The extreme price volatility of raw materials has always been a challenge for manufacturers. Businesses have to adapt to the unstable price of raw materials to remain competitive in the market. AI-powered software like can predict materials prices more accurately than humans and it learns from its mistakes.
- **Robotics:** Industrial robots, also referred to as manufacturing robots, automate repetitive tasks, prevent or reduce human error to a negligible rate, and shift human workers' focus to more productive areas of the operation. Applications of robots in plants vary. Applications include assembly, welding, painting, product inspection, picking and placing, die casting, drilling, glass making, and grinding.
- **Edge analytics:** Edge analytics provides fast and decentralized insights from data sets collected from sensors on machines. Manufacturers collect and analyze data on edge to reduce time to insight. Edge analytics has three use cases in manufacturing:
  – Improving production quality and yield
  – Detecting early signs of deteriorating performance and risk of failure
  – Tracking worker health and safety by using wearable's
- **Quality assurance:** Quality assurance is the maintenance of a desired level of quality in a service or product. Assembly lines are data-driven, interconnected, and autonomous networks. These assembly lines work based on a set of parameters and algorithms that provide guidelines to produce the best possible end-products. AI systems can detect the differences from the usual outputs by using machine vision technology since most defects are visible.
- **Inventory management:** Machine learning solutions can promote inventory planning activities as they are good at dealing with demand forecasting and supply planning. AI-powered demand forecasting tools provide more accurate results than traditional demand forecasting methods (ARIMA, exponential smoothing, etc) engineers use in manufacturing facilities. These tools enable businesses to manage inventory levels better so that cash- in-stock and out- of-stock scenarios are less likely to happen.
- **Process optimization:** AI powered software can help organizations optimize processes to achieve sustainable production levels. Manufacturers can prefer AI-powered process mining tools to identify and eliminate bottlenecks in the organization's processes. For instance, timely and accurate delivery to a customer is the ultimate goal in the manufacturing industry. However, if the company has several factories in different regions, building a consistent delivery system is difficult. By using a process mining tool, manufacturers can compare the performance of different regions down to individual process steps, including

duration, cost, and the person performing the step. These insights help streamline processes and identify bottlenecks so that manufacturers can take action.

- **AI-Powered digital twin use cases:** A digital twin is a virtual representation of a real-world product or asset. Combining AI techniques with digital twins, manufacturers can improve their understanding of the product and allow businesses to experiment in future actions that may enhance asset performance. There are typically 4 applications of digital twins in manufacturing.

ADVANTAGES OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRIES

- **Quality control:** The key advantage of artificial intelligence in manufacturing may be quality assurance. Machine learning models may be used by businesses to discover deviations from normal design specifications and uncover faults or inconsistencies that the ordinary human may not notice.
- **Quick decision making:** Companies may share simulations, confer on industrial activities, and transmit crucial or significant information in real- time when IIoT is combined with cloud computing and virtual or augmented reality, regardless of geographical location.

  The data collected by sensors and beacons aids in determining customer behaviour, helping businesses to predict future demands and make quick manufacturing choices, as well as speeding up the interchange between manufacturers and suppliers.
- **Preventative maintenance:** Another advantage of machine learning is preventative maintenance. When the AI platform can forecast which components need to be changed before an outage happens, you can identify issues before they occur and guarantee that production does not have to be halted due to equipment failure.
- **Digital twins:** A digital twin is a virtual representation of a factory, product, or service. The representation matches the physical attributes of its real-world counterpart through the use of sensors, cameras, and other data collection methods. To make digital twins work, the first thing you have to do is integrating smart components that gather data about the real-time condition, status or position with physical items. The components are connected to a cloud-based system that received all the data and processes it.
- **Direct automation:** IIoT connects all IoT enabled devices to the factory floor, integrating manufacturing processes with big data and making them programmable via a logic controller. Increased use of precision sensory equipment means that information can be generated, recorded and analyzed for all aspects of the production process, covering anything from temperature to item picking and packaging.
- **24/7 Production:** Human beings are biological organisms and need regular maintenance, e.g. food and sleep. For any production facility to continue working round the clock it is necessary to introduce shifts, using three human workers for every 24 hour period. Robots don't get tired or hungry, and are capable of working on the production line 24/7.
- **Safety:** Human beings are fallible and prone to making mistakes, especially if they are tired or distracted. Errors and accidents do occur on the factory floor and in any construction

or processing environment; a tendency which can be all but eradicated by AI and robotic assistance.

- **Lower operational costs:** Many companies are viewing the introduction of AI into the manufacturing industry with trepidation, as it requires a huge capital investment. On the other hand, the ROI is significant and increases as time goes on. Once intelligent machines begin to take over the daily activities of a factory floor, businesses will benefit through considerably reduced operating costs, with predictive maintenance helping additionally to reduce machine downtime.

  These days, consumers are increasing their demand for unique, personalised or customised products, while continuing to expect the best value.
- **Greater efficiency:** IIoT enables the collection of vast amounts of data and advanced analytics which can be used to gain insights into consumer behaviour. Trends can be predicted, patterns recognised and market developments forecast across time, socioeconomic sectors and geographic markets, as well as taking into account political developments, macroeconomic cycles and even weather patterns.
- **Quality control:** AI is also extremely useful for carrying out predictive maintenance on machinery and equipment. Using sensors to track performance and operating conditions, machines can learn to predict malfunctions and failures, and take action to remedy them before they occur. This can result in faster feedback, helping companies to eradicate unplanned downtimes.
- **Quick decision making:** When IIoT is coupled with cloud computing and virtual or augmented reality, companies can share simulations, confer on production activities and exchange critical or important information in real-time, irrespective of geographical location.

DISADVANTAGES OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRIES

- **Predictive maintenance means less downtime:** While you will have maintenance costs relating to the AI processes themselves, the predictive maintenance of AI means you can quickly and accurately predict when the next failure of a machine, part, or system will occur.

  Having foreknowledge of such things means you will not suddenly have to halt production when a machine, part, or system fails, as you will be able to solve the issue before that happens.
- **AI enables higher quality:** Manufacturing companies are finding it more and more challenging to maintain high levels of quality and also comply with regulations and standards concerning quality.

  That becomes even more difficult when deadlines for getting to market are increasingly becoming shorter.

- **AI can enhance production designs:** AI is changing the way that products are designed, for the better. For instance, one method is for designers and engineers to define a brief that is then inputted into an AI algorithm.

  The brief's data would include things like restrictions and parameters for types of materials, available production methods, time constraints, and budget limitations.
- **AI helps manufacturers adapt to an ever-changing market:** AI's use in the manufacturing industry is not limited to design methods and ways of improving production on the machine shop floor. It can also be used to optimize manufacturing supply chains and identify market changes.
- **AI can be expensive:** Although adopting AI allows you to cut labor costs, the initial implementation of AI can be pretty costly; especially for startups and small companies. However, you can lessen the cost of implementing AI by opting for second- hand CNC machines, such as those from leading brands available at revelationmachinery.com.
- **You need skillful experts:** Because AI is continually evolving, you will always need an AI expert on hand with the relevant skills to provide abilities like sophisticated programming. At present, AI experts are few and in high demand, which means you may not be able to find a professional easily. It also means the cost of employing an AI expert will be more expensive than hiring others.
- **AI is Open to vulnerabilities:** AI is vulnerable to cyber attacks, and as AI becomes more sophisticated and widespread, cybercriminals will continue to come up with new hacking methods. If there is even a small breach, it can disrupt your production line. In fact, a small breach can potentially shut down a manufacturing business.

FUTURE OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRIES

For a large group of industries such as gaming, banking, retail, commercial, and government, etc.AI is extensively used and is slowly impending in the manufacturing sector, facilitating the industrial Automation. AI-driven machines are laying an easier path to the future by yielding a bunch of benefits – offering new opportunities, enhancing production efficiencies, and bringing machine interaction closer to human interaction.

AI facilitates to conquer many internal challenges that have been around in the industry: from expertise shortage to complexity in decision making, issues related to integration, and overloaded information. Making use of AI in manufacturing plants enables businesses to completely transform their proceedings. Let's have a glance at how AI is helping the manufacturing sector to accomplish:

- **Directed automation:** The utilisation of AI and robots is particularly observed in industrial manufacturing as they revolutionize mass-production. Robots are capable of doing recurring activities, designing the production model, rising competence, building automation solutions, eradicating human error and delivering superior levels of quality assurance.

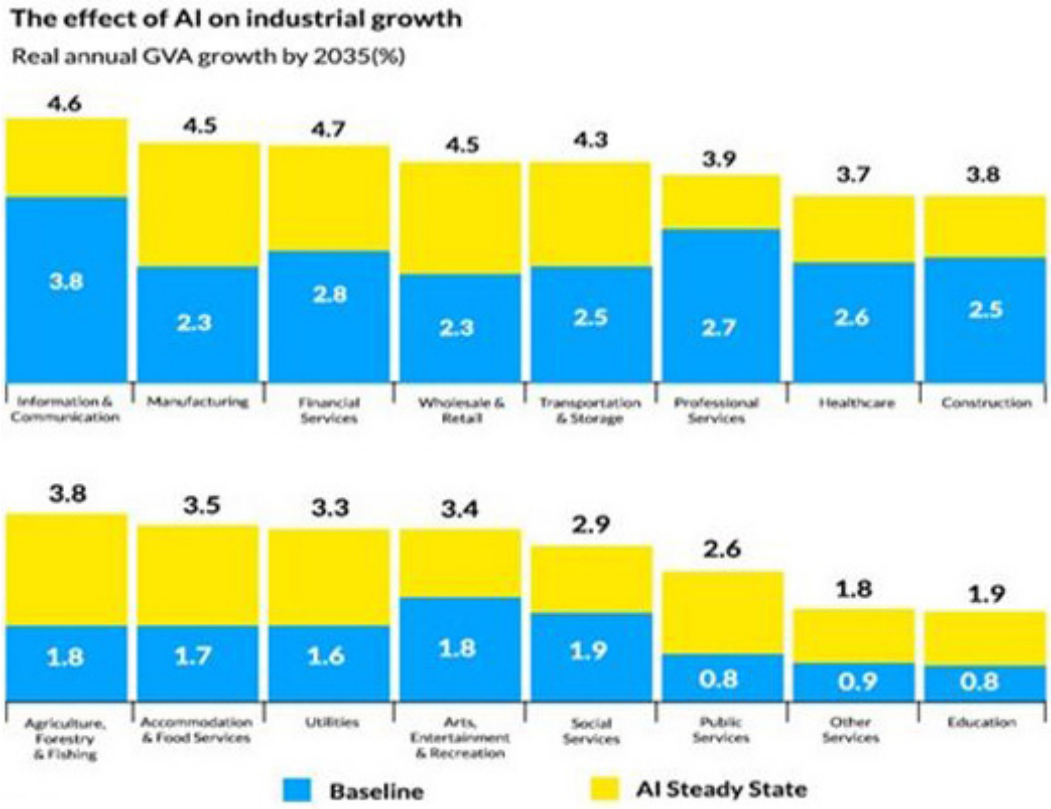
- **24×7 production:** While humans are forced to work in 3 shifts for ensuring continuous production, while robots are capable to work for 24/7 in the production line. Businesses can be witnessed to expand in terms of production capabilities and meet the high demand of customers worldwide.
- **Safer operational environment:** With several errors taking place on the manufacturing plant, a step towards AI means less human resource have to carry out dangerous and overly laborious work. As robots replace humans and perform normal and risky activities, the number of workplace accidents will decrease all across.
- **Novel opportunities for humans:** As AI takes over the manufacturing plant and automates boring and ordinary human tasks, workers will get to focus on complex and innovative tasks. While AI takes care of unskilled labor, humans can focus on driving innovation and routing their business to advanced levels.
- **Condensed operating costs:** Although, bringing AI onto the manufacturing industry would necessitate a huge capital investment, the ROI is significantly high. As intelligent machines start taking care of day-to-day-activities, businesses can enjoy considerably lower operating cost.
- **Added Benefits of AI**: AI and industrial automation have advanced considerably in the recent years. Development in machine learning techniques, advances in sensors and therefore, the growth of computing power has helped produce a brand new generation of robots.
- **The affect AI in the manufacturing industry:** The manufacturing industry has always been available to embrace the innovative technologies. Drones and industrial robots have been a part of the manufacturing industry since 1960's. The following automation revolution is just around. With the implementation of AI, if organisations can keep inventories lean and reduce the cost, there is a high probability that the Manufacturing Industry will encounter an empowering development.
- **The trends of manufacturing industry with emerging AI:** AI will impact manufacturing in ways we have not yet anticipated. Nonetheless, we can already look at some more noticeable examples.

The continued enhancement in computer visualization has long been used for quality assurance by detecting product defects in real time. But now that manufacturing involves more information than ever integrated with the fact that plant managers do not want to pay employees to enter information—AI with computer vision can rationalize how information gets apprehended. A factory worker should be able to acquire raw materia ls reserve from the shelf and have the stock transaction created automatically based on a camera observing the process.

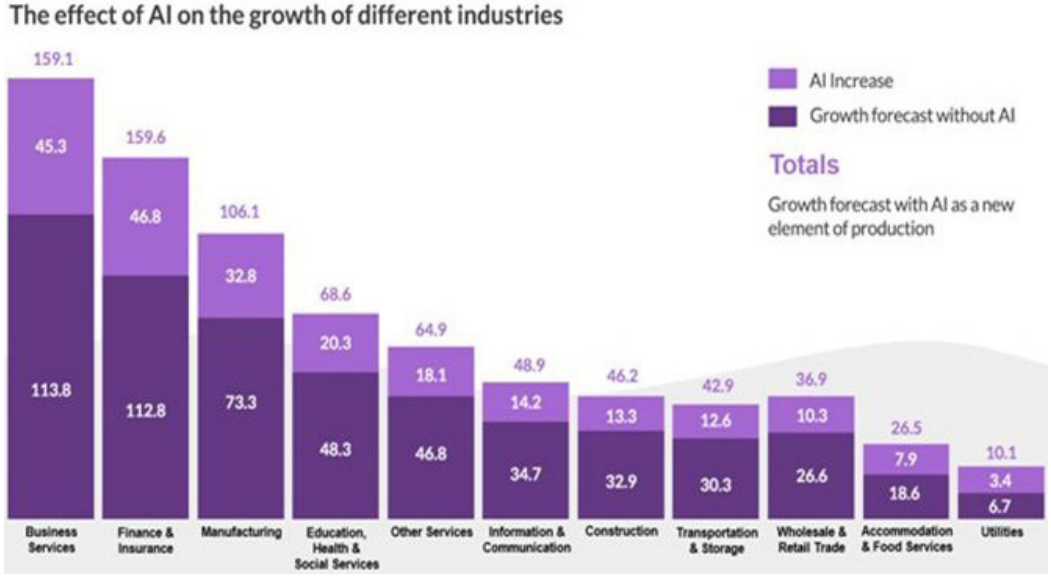
SOME IMPORTANT STATISTICAL INFORMATION OF AI IN DIFFERENT SECTORS

By 2035 AI technologies have the impending to rise in production 40% or more.

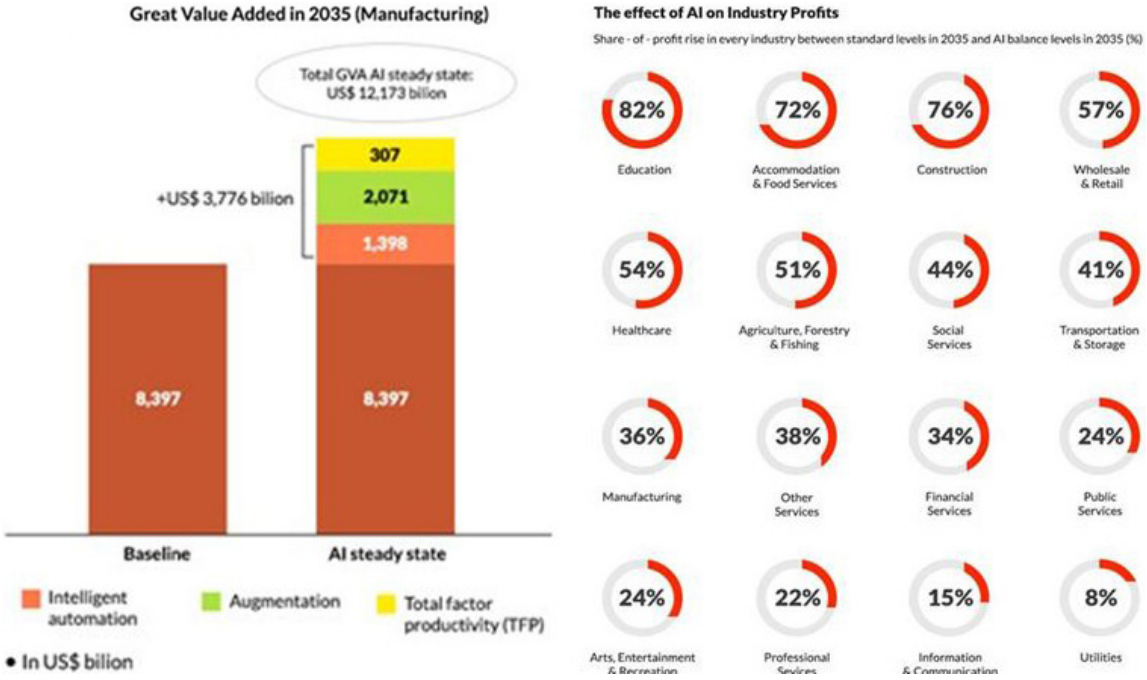
AI will boost the economic growth an average of 1.7% across 16 industries by 2035.



The bar chart illustrates the growth forecast with AI as a new element of production



Great Value Added in 2035 for with respect to the Manufacturing sector



CONCLUSION

In conclusion, we have seen how Artificial Intelligence in manufacturing is impacting the world. But contrary to the threat of human positions losing to AI, the assembling would proceed towards higher profitability and expanded effectiveness with the assistance of AI.

Subsequently, the workforce can concentrate more on advancement and new tasks. They can finally add more to the development and splendid eventual fate of the Manufacturing Industry.

For years robotics, advanced analytics, and automation has been a major part of the manufacturing industry. The increasing scale of adoption of AI in manufacturing seems more like an evolution, rather than an industry disruption. Technology is already here and more massive implementation is a matter of time. According to McKinsey, by 2025 smart factories will generate $37 trillion.

Finally, manufacturing in the near future would be fully automated. The manufacturing processes enabled by Artificially Intelligent Systems would be able to perform the required processes. It will also be able to inspect, improve, and quality checks the products without any human intervention.

Artificial intelligence is a game-changing technology for any industry. As the technology matures and costs drop, AI is becoming more accessible for companies. In manufacturing, it can be effective at making things, as well as making them better and cheaper. The manufacturing

industry has always been eager to embrace new technologies – and doing so successfully. Now, with AI adoption, they are able to make rapid, data-driven decisions, optimize manufacturing processes, minimize operational costs, and improve the way they serve their customers. This doesn't mean that manufacturing will be taken over by the machines – AI is now an augmentation to human work and nothing can be a substitute of human intelligence and the ability to adapt to unexpected changes.

AI's role in Manufacturing will be huge, as it will enable a powerful combination of using the consistency, speed, and scalability powers of robots with the skill and creative ability of humans. Artificial intelligence and robotics, in collaboration with new technology like 3D printing, will prove beneficial in bringing advancement in manufacturing and fulfilling increasing consumer demands.

Unlike the big fear of human jobs being lost to AI, the manufacturing will be driven towards higher productivity and increased efficiency with the help of AI. The workforce can focus more on innovation and new operations, and contribute to the growth and bright future of the Manufacturing Industry.

REFERENCES

[1] Arinez, J.F., Chang, Q., Gao, R.X., Xu, C., & Zhang, J. (2020). Artificial intelligence in advanced manufacturing: Current status and future outlook. *Journal of Manufacturing Science and Engineering*, 142(11), 110804.

[2] Chiong, R., & Weise, T. (2012). Variants of evolutionary algorithms for real-world applications (Vol. 2). Z. Michalewicz (Ed.). Berlin: Springer.

[3] Ding, X., & He, Q. (2017). Energy-fluctuated multiscale feature learning with deep convnet for intelligent spindle bearing fault diagnosis. *IEEE Transactions on Instrumentation and Measurement*, 66(8), 1926–1935.

[4] Hasan, M.J., & Kim, J.M. (2018). Bearing fault diagnosis under variable rotational speeds using stockwell transform-based vibration imaging and transfer learning. *Applied Sciences*, 8(12), 2357.

[5] Hutchinson, G.K. (1984). Flexibility is Key to Economic – Feasibility of Automating Small Batch Manufacturing. *Industrial Engineering*, 16(6), 76.

[6] Kim, H., & Youn, B.D. (2019). A new parameter repurposing method for parameter transfer with small dataset and its application in fault diagnosis of rolling element bearings. IEEE Access, 7, 46917-46930.

[7] Kozjek, D., Kralj, D., & Butala, P. (2017). Interpretative identification of the faulty conditions in a cyclic manufacturing process. *Journal of Manufacturing Systems*, 43, 214-224.

[8] Lin, P., Abney, K., & Bekey, G.A. (Eds.) (2014). Robot ethics: The ethical and social implications of robotics. MIT press.

[9] Malaca, P., Rocha, L.F., Gomes, D., Silva, J., & Veiga, G. (2019). Online inspection system based on machine learning techniques: Real case study of fabric textures classification for the automotive industry. *Journal of Intelligent Manufacturing*, 30, 351-361.

[10] Müller, V.C. (Ed.). (2012). Philosophy and theory of artificial intelligence (Vol. 5). Springer Science & Business Media.

[11] Nikolaidis, S., Lasota, P., Rossano, G., Martinez, C., Fuhlbrigge, T., & Shah, J. (2013, October). Human-robot collaboration in manufacturing: Quantitative evaluation of predictable, convergent joint action. In IEEE ISR 2013 (pp. 1-6). IEEE.

[12] Nilsson, N.J. (2009). The quest for artificial intelligence. Cambridge University Press.

[13] Ojstersek, R., & Buchmeister, B. (2020). The impact of manufacturing flexibility and multi-criteria optimization on the sustainability of manufacturing systems. *Symmetry*, 12(1), 157.

[14] Ravichandar, H.C., & Dani, A. (2015, September). Human intention inference and motion modeling using approximate em with online learning. In *2015 IEEE/RSJ International Conference on Intelligent Robots and Systems* (*IROS*) (pp. 1819-1824). IEEE.

[15] Springer, P.J. (2013). Military robots and drones: a reference handbook. ABC-CLIO.

[16] Tang, Y., & Xu, C. (2010). Online Tool Deflection Compensation in End Milling of Curved Workpiece. *Int. J Electron. Comput. Eng. Edu*., 1(1), 23-28.

[17] Warwick, K. (2013). Artificial intelligence: The basics. Routledge.

Study of Importance of IoT in Smart Cities

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Abstract

IoT has great applications in our day-to-day life. It is transforming human lifestyle and the way humans interact with things. Sensors embedded in the underlying system allow it to collect data from the surroundings. This data is then utilised for humans. It reduces human intervention by connecting different devices. This technology is now used to make smart cities. These smart cities are equipped with internet enabled devices to collect data from surrounding and help utilise for human welfare. With increase in population and over exhaustion of natural resources humans need to rethink their rehabilitation. It enabled devices are a great way to transform and establish cities which are capable enough to manage their natural and human resources. The main aim of this paper is to study the importance of Iot in smart cities in India, understanding policies of IoT in development of Indian economy and how can it help in growth of such a large population like India.

Keywords: *Natural Resources, Smart Cities, Human Lifestyle, Indian Economy, Data Analysis, Embedded Systems.*

INTRODUCTION

IoT is replacing the world with a new lifestyle. After globalisation the world has become boundaryless. US, China, and South Korea have already started preparations for taking advantage of IoT. India isn't always willing to lag in the back of. The IoT is poised to make fast inroads in India as mission will be operated as centrally subsidised scheme and important government proposes monetary support of INR 48,000 crores in five years and plans to set up one hundred smart cities across the country. With the use of IoT cities are growing rapidly with great efficiency and faster growth [1].

In 2016, at the United Nations conference connected objects were extensively addressed. This gave a chance to many countries to rethink environmental issues and solve them largely. IoT can help in monitoring the waste management of cities. For instance, dustbins can be embedded with sensors and collect data. This information can be used and these sensors can indicate they are going to be full.[2]. Many studies recommend that the use of IoT devices can increase the safety and security of smart homes. Devices like smart alarms, cameras can be connected to your mobile phones and in case of any threat; you can effectively take the required action. Intelligent devices like traffic signals, connected cars, AC's are taking over the traditional devices. In this paper, we will look how IoT with its increasing efficiency is

bringing the revolution in how people live their lives. IoT can effectively decrease pollution and increase the efficiency of machines and natural resources.

Concept of IoT

Connecting physical devices using the Internet is known as the Internet of Things. These devices are embedded with sensors to collect and share data [3]. IoT is influencing our world. It is connected AC's, cars, homes to your smart phones. All these devices share data about environmental conditions and this data is then gathered and used to make human lifestyle easy. This is done using sensors. These sensors are embedded in every physical device. These sensors continuously emit data. It provides a common platform and common language to interpret and analyse this data [4,5,6].



Figure 1: Different Physical Devices

Figure 1 shows how different physical devices are connected to smartphones . This is just the beginning of smart devices, more is yet to come.

Architecture of IoT

A simple architecture of IoT has been shown in Figure 2.

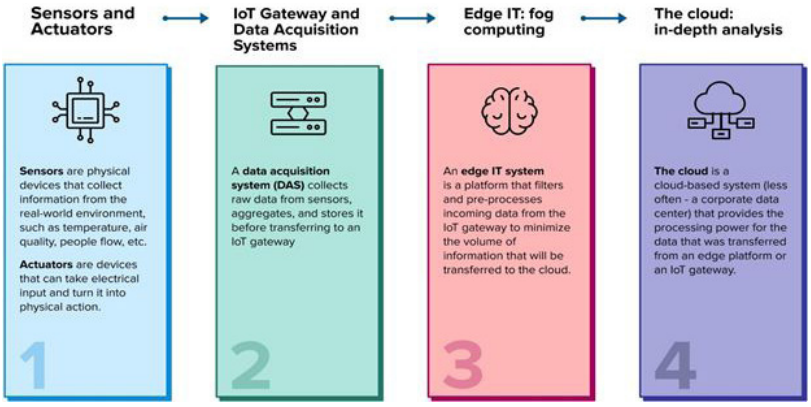


Figure 2: Stages of IoT Architecture

SMART CITIES

Different practitioners have different definitions on the idea of smart cities. In general, a smart city is a city that uses information technology and communication to enhance sustainability, efficiency and workability of human lifestyle [7]. A smart city smartly manages its resources and waste production.

The Government of India has started a mission to develop over hundred smart cities across the country making them citizen friendly [8]. For a country like India where cities are overpopulated, it was a great decision to balance the population and stop the exploitation of resources. Figure 3 shows the number of cities selected from India states and Union Territories.

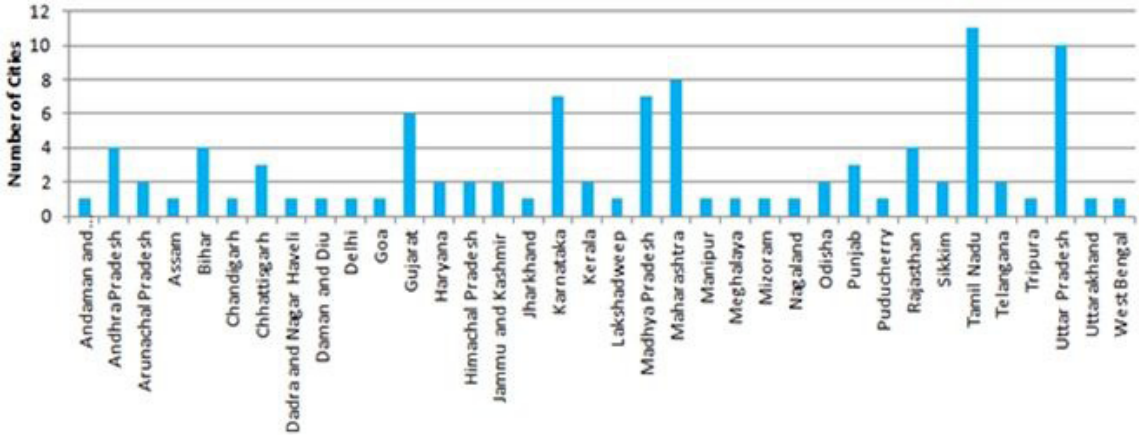


Figure 3: Number of Cities Selected from Indian States/UTs

SMART CITIES AND IoT

There are several applications of IoT in smart cities. From saving water to saving the lives of citizens, IoT has been proved as one of the best technologies for human lifestyle changes. Sensors embedded machines can analyse environmental conditions and use this data to inform us. Ever because the idea of smart cities was first delivered, internet of things technology has been a key pillar of clever town development. As technology advances and more international locations embrace next-era connectivity, IoT era will keep growing and feature a larger impact on the way we stay. In step with numbers from the improving net of factors (IoT) safety with software-defined community (SDN) observed, there can be extra than 75.44 billion linked IoT gadgets by the year 2025. With a forecast of over 7.33 billion mobile customers by 2023 and more than five million linked wearable devices customers by 2022, the net of factors is predicted to develop into one of the smartest collective and collaborative systems in history.

Let us look into detail how IoT used to make the cities smarter.

1. **Fitness:** IoT can help save the lives of many humans. In case of any predominant damage or issue like a heart attack, the IoT-enabled devices will inform the hospitals and the docs can be able to put together for the treatment by the point the patient arrives at the health

facility. This will store a whole lot of time and the existence of the affected person. The idea is huge and will store plenty of lives [9].

2. **Farming:** IoT goes to convert the agriculture area and so the lives of many bad farmers. Tools are being advanced for drip irrigation, crop styles, watering, manuring, and lots more. The destiny of farming with the intervention of IoT is promising [10].
3. **Power** saving: With this large populace, it is miles vital to neatly use electricity. By using organising bidirectional verbal exchange with the service vendors and cease-customers, statistics like detection of faults may be acquired. Stop users can have a higher expertise of their use of power and may hence make essential steps for power fees [7].
4. **Water supply:** Sensors connected with the internet can analyse the statistics and might make essential modifications in line with purchaser conduct. The stop-consumer can come across faults and accordingly take necessary action. The extent of water required as consistent with man or woman also can be detected with IoT. In addition, can assist in making smart use of the water available and can help in saving water [11].

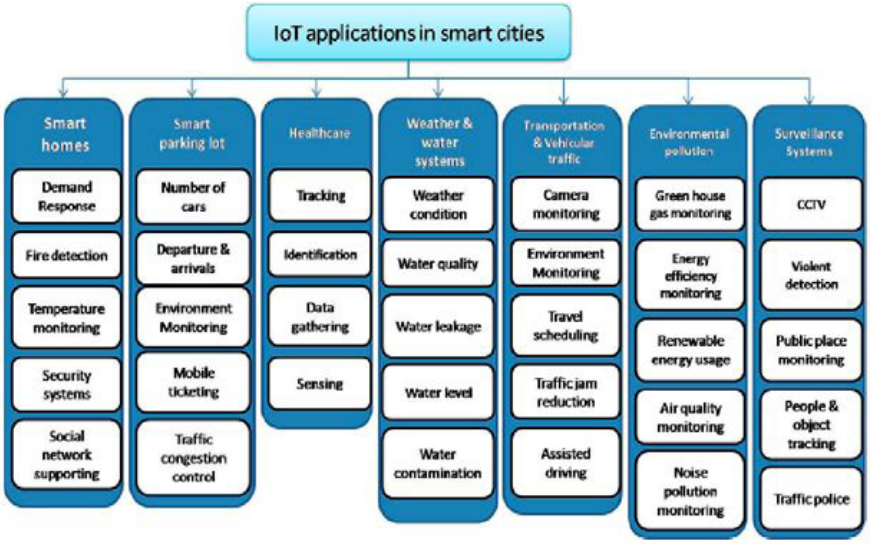


Figure 4: IoT Applications in Smart Cities

REFERENCES

1. Rida Khatoun and Sherali Zeadally. Smart cities: concepts, architectures, research opportunities. *Communications of the ACM*, 59(8): 46–57, 2016.
2. Gartner Says By 2020, More Than Half of Major New Business Processes and Systems will Incorporate Some Element of the Internet of Things. Technical report, Gartner, Inc, 2016.
3. Debiao He and Sherali Zeadally. An analysis of rfid authentication schemes for internet of things in healthcare environment using elliptic curve cryptography. *IEEE Internet of Things Journal*, 2(1):72–83, 2015.
4. Coordination and Support Action for Global RFID-related Activities and Standardisation: RFID and the Inclusive Model for the Internet of Things. *Technical report*, *CASAGRAS*, 2009.

5. Luigi Atzori, Antonio Iera, and Giacomo Morabito. *The internet of things: A survey. Computer networks*, 54(15):2787–2805, 2010.
6. Debasis Bandyopadhyay and Jaydip Sen. Internet of things: Applications and challenges in technology and standardization. *Wireless Personal Communications*, 58(1):49–69, 2011.
7. Hancke, G.; Silva, B.; Hancke, G., Jr. The Role of Advanced Sensing in Smart Cities. *Sensors* 2012, 13, 393–425.
8. Kyriazis, D.; Varvarigou, T.; White, D.; Rossi, A.; Cooper, J. Sustainable smart city IoT applications: Heat and electricity management amp; Eco-conscious cruise control for public transportation. In *Proceedings of the 2013 IEEE 14th International Symposium on* "*A World of Wireless, Mobile and Multimedia Networks*" (*WoWMoM*), Madrid, Spain, 4–7 June 2013; pp. 1–5.
9. Niyato, D.; Hossain, E.; Camorlinga, S. Remote patient monitoring service using heterogeneous wireless access networks: Architecture and optimization. *IEEE J. Sel. Areas Commun*. 2009, 27, 412–423.
10. Gubbi, J.; Buyya, R.; Marusic, S.; Palaniswami, M. Internet of Things (IoT): A vision, architectural elements, and future directions. *Future Gener. Comput. Syst*. 2013, 29, 1645–1660.
11. Zhu, C.; Leung, V.C.M.; Shu, L.; Ngai, E.C.H. Green Internet of Things for Smart World. *IEEE Access 2015*, 3, 2151–2162.

The Contribution of STEM Education in Raising Educational Standards

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Abstract

In September 2015, the United Nations laid out a guide towards working in the world from various social, economic, and ecological viewpoints, and the Sustainable Development Goals (SDGs) were conceived. The Sustainable Development Goals (SDGs) have been promoted by the (UN) in a number of campaigns, and one of the SDGs includes an Objective for quality education. The coordinated STEM ("Science, Technology, Engineering, and Math") strategy is a promising instructional framework for practical advancement that raises the Caliber of training. It is discussed that for reasonable STEM schooling and information venture, a human-focused learning configuration approach is basic and significant. Maintainability in this settingis getting through the support of mechanical directions for useful monetary and social connections by exhibiting life-basic situations through life-basic framework advancement and educational encounters. Post-typical times and post-ordinary science are portrayed by logical inconsistencies, obscure questions and vulnerabilities, and intricacy. The problems facing the globe today necessitate a progressive shift in educators' and students' perspectives. Therefore,it is imperative to identify new STEM occupations that will prepare students for this post- typical world and the maintainability mentality it demands. STEM instruction upholds feasibleadvancement by building the limits of people in the future. The review analyzes how exploration exercises have evolved and improved as they relate to "STEM schooling" and "Quality Education" as shown by the distributions. The findings demonstrate that early childhood education, computing education, and environmental education are among the main interests in STEM research and instructional design. The findings of this study will improve our understanding of coordinated STEM education, support current work in this area, and advance future research.

Keywords: *Early Childhood Education, STEM Education, Sustainable Development, High-Quality Instruction, and Computing Education.*

INTRODUCTION

In 2015, the UN General Assembly jointly adopted a set of global Sustainable Development Goals (SDGs), which include 17 objectives and 169 target areas (Hak, 2016). A few initiatives have been launched by the UN to enhance education in SD (Nguyen, 2020). The SDGs must be achieved, and education is essential. Instructive strategies assume a critical part in the successful execution of schooling for SD and impact the improvement of educational programs,

educator preparation, learning materials, and learning conditions (Nguyen, 2020). Classrooms are spaces where instructors can advance and in still values and attitudinal changes that permit the SDGs to accomplish their objectives. Education is a key /method for SD. Teachers can advance and teach the values and attitude shifts necessary for the SDGs to achieve their goals in the classroom. In this way, realizing the importance of "Quality Education" for achieving, expanding, and effectively implementing the other SDGs (Del Cerro Velazquez and Lozano Rivas, 2020) is clear.Execution of the STEM (Science, Technology, Engineering, Math) movement in training will focus on "Quality Education." An incorporated STEM approach is apromising system for supportable improvement training (Nguyen, 2020). In this way, there is a linkage between "Quality Education" and STEM schooling. As to the advantages of incorporated STEM schooling, writing showed that coordinated STEM guidance opens students to significant settings where they can upgrade twenty-first-century abilities and inspiration to acquire STEM subjects (Nadelson and Seifert, 2017; NRC, 2014). In any case, despite the fact that specialists and instructive guidelines prescribe an interdisciplinary way todeal with showing STEM content (Kelley and Knowles, 2016; Brown, 1989; ITEEA, 2020; NGSS Lead States, 2013), execution of coordinated STEM training by educators and the impact of incorporated STEM schooling on students' STEM content information accomplishment and twenty-first-century abilities are under-explored (Barrett., 2014; English,2016; Honey, 2014; Khalil and Osman, 2017; Kelley, 2021). As Nadelson and Seifert (2017) placed, proficient information and certainty are fundamental for educators in effectively executing coordinated STEM schooling in their classrooms (Nadelson and Seifert, 2017). Science and designing innovation training (ETE) educator joint effort is likewise indispensable.As indicated by the "National Academy of Engineering" (NAE) "Grand Challenges" (GC) Advisory group, engineers are expected to join forces with researchers and investigate logicalrequests to grasp our current circumstances and work on our reality (NAE, 2016). US Instructive principles likewise require science and designing practices to be shared (ITEEA, 2020; NGSS Lead States, 2013) for fruitful STEM training execution. Moreover, making an economical Local area of Training to help STEM educators is basic (Kelley and Knowles, 2016; Kezar and Gehrke, 2017). Instructors can share their interests and extend their insight bytrading aptitude with different educators and specialists on a continuous premise (Kelley40, 2021; Wenger, 2002).

STEM EDUCATION AND ITS IMPORTANCE

The acknowledgment that extensive scholarly ideas are joined with irrefutable models is managed through STEM instruction (Samsudin, 2020). Students benefit from STEM preparation since they can involve specific disciplines to investigate their imagination to tackle issues (Suratno, 2020). At the point when students apply STEM in a unique circumstance, they make associations between their neighborhood local area, their work environment, and the worldwide work to be cutthroat in the advanced economy (Bruce-Davis, 2014; Hacioglu and Gulhan, 2021). As per Nguyen (2020), STEM guidance intends to give students a different scope of abilities and interdisciplinary information.

Sustainable Development through STEM Education

Children and youth are urged by STEM Schooling for Sustainable Development to use their STEM skills and scientific knowledge as a crucial justification for practical action in our world. Science, technology, engineering, and math knowledge, skills, and comprehension are crucial for assisting pupils in comprehending global concerns and supporting societal initiatives that tackle these issues in a meaningful and knowledge-based manner. The focus of individual actions on clear, intellectual characteristics gives us the ability to act locally and develop a sense of ownership over our environment. Children should be encouraged to become problem-solvers in their own domains and seen as dynamic partners in request and management concerns.

In this spirit, STEM Education for Sustainable Development (STEM4SD Schooling) contributions ought to be situated towards the accompanying core values:

- Empower intuitive, student-focused instructing that empowers exploratory, activity-situated, intelligent, and extraordinary learning.
- Build up an entire establishment approach that spotlights the foundational improvement of the instructive office towards quality training and supportability and thinks about the job of the board at the school, state, or government level.
- Encourage free reasoning and dependable activity that happens in the student setting and includes the establishment's social and common habitat, giving the valuable chance to carry out and encounter genuine changes in the students' own local area, which then reinforces their ability for office.
- Be viable with the objectives of a practical turn of events.
- Fortify proof-based and contemplated argumentation, perceive intricacy, advance variety of assessment and real impact of points of view, and support the basic impression of values.
- Engage present and people in the future to utilize science, technology, engineering, and mathematics (STEM) abilities and intelligent thinking to tackle complex maintainability issues.

The direction of individual activities towards specific unequivocal and intelligent qualities empowers us to act locally so that we likewise get a sense of ownership with our general surroundings—consolidating our "individual character, neighborhood personality, and worldwide personality" as we utilize our STEM information to do social great. STEM4SD Training can advance raising intelligent change specialists to influence their networks and society through an information-based, activity-situated, participatory, and integrative concentration. To establish conditions that cultivate organization through request-based learning, STEM4SD Training should coordinate STEM fields of information and involvement in friendly and profound learning and urban commitment Youngsters should be viewed as dynamic partners in request and manageability issues and be urged to become issue searchers and solvers in their regions. This connects with the importance of logical proficiency among

small kids. They need to figure out how to attempt science, to obtain logical skills through training, which assumes the reconciliation of fields of information (interdisciplinarity) to resolve down-to-earth issues, for instance, considering understudy inquiries on environmental change into pertinent science education. Moreover, STEM4SD Training can be connected to the dynamic association of the neighborhood local area. This calls for coordinating science-based information and its incentive for society with different types of information (innovation,designing, math, history, workmanship, culture, and so on) present in the region in a way that rises above any one discipline all alone to all in all resolve a typical issue (i.e., transdisciplinary). STEM4SD Training builds up a fundamental methodology that – as per an "entire establishment approach" – centers around the improvement of the instructive office all in all and thinks about not just the job of the youth instructors or essential educators yet additionally school pioneers, region or state pioneers, or other leaders at the administration level or service of schooling. STEM4SD Schooling likewise advances support for not simply labor force improvement (a conventional contention of why STEM Training matters) but for fostering understudies' decisive reasoning and maintainability outlooks, propensities for utilizing logical proof to legitimize manageable practices, and comprehension of the worth of STEM Instruction for society overall.

SUSTAINABLE DEVELOPMENT EDUCATION (ESD)

Education for Sustainable Development (ESD) is characterized as an "interdisciplinary learning strategy covering the coordinated social, monetary, and natural parts of the formal andcasual educational plan". ESD is viable with different fields of instruction, like science training,natural schooling, intercultural schooling, a majority rule government and citizenship instruction, and local area-based schooling. It endeavours to coordinate them through youngster-focused approaches, to fabricate a reliable structure to address the current socio-natural emergency. Against a perspective on small kids as not fit to be shown about basic cultural issues, the writing will in general concur not just about the congruity of ESD in youth, yet in addition on the need to encourage youngster-focused ways to deal with starting the improvement of capacities, mentalities, and values for supportable improvement from aprevious age.

Objectives of Training for (ESD) for youngsters and for academic staff and chiefs in early schooling contain inspiration, understanding and information, reflection and assessment, values and moral choices, and activity, as follows:

- **Inspiration:** To foster interests, for instance in environmental issues or civil rights, and to encounter self-adequacy, for instance in drawing in with these issues at the nearby level.
- **Understanding and information:** To figure out fundamental ideas and to develop information.
- **Reflection and assessment:** To perceive issues (e.g., non-maintainable turn of events), figure out points of view, and participate in valuable conversations.
- **Values and moral choices:** To encounter values and the exchange of and reflection on esteem principles, subsequently starting the improvement of an intelligent disposition of

basically looking at and applying moral standards and, in the long haul, the capacity to make moral decisions.

- **Activity:** To take part in choices, arrange arrangements, and change something in their regular day-to-day existences.

Like the methodologies of request based-learning, ESD depends on a co-constructivist comprehension of learning.

Key techniques for ESD are investigation-based, request-based, and dialogic learning, as well as philosophizing with youngsters. Request-based addressing in ESD takes the environmental, monetary, and sociocultural aspects into the record and supports kids in perceiving intricaciesand figuring out how to productively and boldly handle equivocalness and difficult circumstances. Instruction for Supportable Improvement ought to notice basically instructive acts of teaching or transmission of straightforward activity rules. While guidelines and regulations in legislative issues and financial matters can be significant instruments to advance economic turn of events, in training the philosophies ought to focus on creating regular activities in a participatory way through information gained and choices made in a request- based and freely intelligent way. Key subjects of supportability and ESD (e.g., nourishment, clean water, civil rights, and so on) are subjects of long-haul significance; they are around theworld and locally pertinent; they offer open doors for activity; and they can be tended to just through an interdisciplinary or transdisciplinary focal point. The worldwide natural circumstance requests schooling that will advance office beginning as soon as could be expected, with "organization" being characterized as "something that youngsters accomplish together in exchanges as opposed to something they have." The advancement of the organization is considered critical for ESD; notwithstanding, as exploration shows, it has scarcely been placed into practice. Ecological instruction dependent for the most part upon transmission of definitive information has not prompted conduct change on manageability issues. To raise change specialists with ESD, especially from youth, training necessities to zero in on advancing significant encounters for creating organization. Subsequently, we can't exaggerate the significance of learning conditions that attention to creating encounters. These learning conditions can be in the everyday schedule at home, in proper learning spaces like schools, or in casual learning spaces, for example, galleries or science focuses. As expressed in the 2009 extraordinary survey of ESD for ECE "Early Childhood Education: Recommendations for Improvement", children, educators, and all entertainers in the training local area need to rehearse manageability day to day (e.g., through reusing, cultivating, energy creation), and not simply through instructing.

CURRENT RESEARCH, GLOBAL CONCERNS, AND SUSTAINABLE DEVELOPMENT

There is a significant association between STEM education and sustainable development (SD) in school and college instruction, according to Bascopé and Reiss (2021), Gough (2021), Krug (2012), Pahnke (2019), Suh (2019), Ulmeanu (2021), and Velázquez (2020). An important

argument in favor of this expanded facility is the perception of STEM education as one of the major pillars that supports SD by enhancing the capacities of future generations (Pahnk, 2019).

The globe is undergoing a period of significant upheaval at this time of post-typical times andpost-ordinary science, with states being forced to deal with upcoming challenges (Sardar, 2010). To overcome and resolve these major global problems is one of the objectives of STEM education. Since post-typical times and science are characterised by logical inconsistencies, enigmatic questions and vulnerabilities, and complexity (Samuel and Thamburaj, 2015), these enormous global challenges necessitate a gradual shift in how educators and students view the world (Schratz and Symeonidis, 2018). As a result, it is imperative to identify new STEM training positions that will prepare students for the "post-typical" world and the adaptability attitude it demands (Sardar, 2010). Science and innovation are not generally considered by a youthful age to be positive means for tending to great worldwide difficulties yet rather as wellsprings of dread (Eurobarometer, 2015). Thus, an expanded interest in transforming STEM educational programs to be "Future-Arranged STEM Schooling" has been created.

As per Pahnke (2019) a vigorous and progressing execution of future-centered science, engineering, technology, and math (STEM) schooling that is centered around earnest issues, similar to those referenced in the UN SDGs, and expected answers for those issues will assist with safeguarding students, as well as their educators and guardians, against cultural and medical problems that might adversely affect their lives.

Velázquez (2020) further asserts that sustainability requires the ability to anticipate: Ability to anticipate: The capacities to comprehend and analyse various futures—possible, probable, and desirable—to imagine one's own futures, to use the precautionary principle, to weigh the effectsof actions, to cope with risks, and to deal with changes.

STEM education should improve students' capacities for creativity, imagination, logical reasoning, and critical thinking in addition to strengthening students' adaptive attitudes. Additionally, it should prepare students for multidisciplinary learning processes that address the intricate financial, social, and environmental elements of both official and informal educational plans. As a result, they will be able to participate actively in their social systems, which will support their efforts to pursue personal contentment. The purpose of education for sustainable development (ESD), according to Leicht (2018), is to include and equip the current and future generations to cope with their problems using a rational and coordinated strategy to deal with the financial, social, and ecological components of the turn of events. Students todayshould acquire the knowledge and skills necessary to define and address sustainability challenges because they will be living in these future social orders at that age (Suh, 2019).

The Sustainability Overview claims that education for sustainability helps people acquire the knowledge, abilities, moral beliefs, and worldviews required to perform actions that support more sustainable ways of life. It challenges people and groups to think critically about how they perceive and engage with the environment. Future-focused sustainability education prioritizes defending the environment and actively advancing civilization. The promotion of

more sustainable lifestyles must take into account the interconnection of the environmental, social, cultural, and economic systems.

In spite of the fact that STEM schooling ought to have more creative and, for sure, more expectant jobs in recognizing worldwide excellent difficulties and ought to be future-arranged, it is troublesome—and some of the time unthinkable—for STEM educators to conjecture worldwide amazing difficulties and make an interpretation of determining results into useful capstone projects that require philosophies, devices, strategies, and abilities (Tanenbaum, 2016). The abilities that STEM educators should acquire are future-platform STEM skills applicable to STEM-related disciplines, which will engage students to ponder the future (Levrini, 2019). STEM educators ought to have the option to deliberately estimate future worldwide amazing difficulties, basic issues, disturbances, new shrewd advancements, and key areas of examination and development, as well as tackle complex supportability issues imaginative ways.

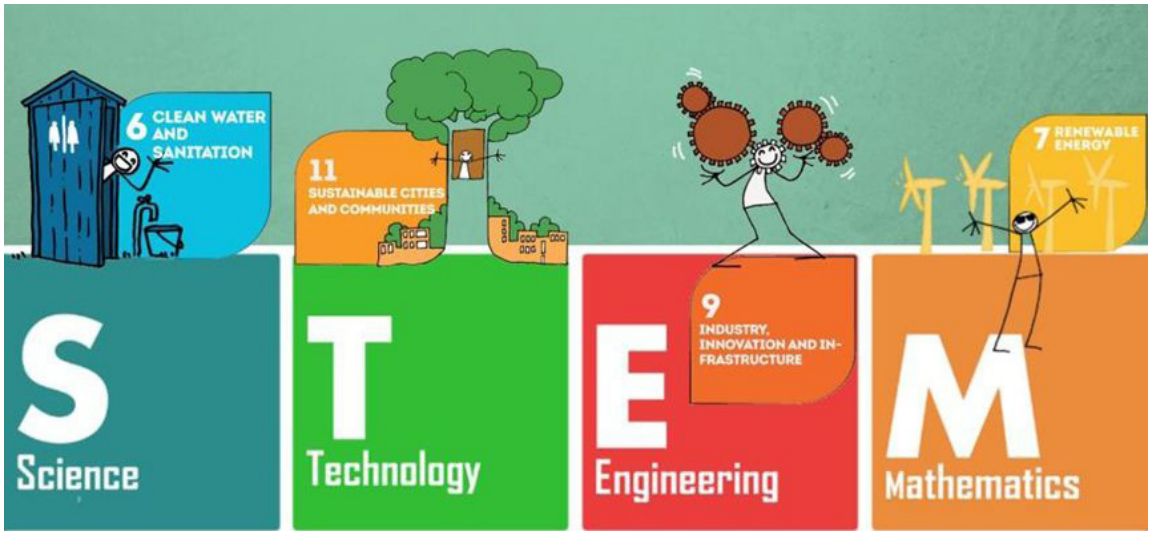


Figure 1: STEM Education for Sustainable Development Goals
Source: The STEM Discovery Week 2018

STEM EDUCATION AND QUALITY EDUCATION

STEM Education & Quality Education; according to Suratno (2020), factors influencing educational quality can be seen in students' capacity for problem-solving and academic learning accomplishments. Students who receive STEM education do better academically and are better problem solvers (Jamali, 2017; Samsudin). According to Suratno (2020), Aslam (2018) related STEM education with quality education and made the case that using STEM education is an alternate strategy for raising educational quality. The knowledge of the value of STEM, according to Sumirat (2019), "could be one of the solutions to improve educational quality." The STEM education strategy also impacts students' capacity for creative thought, which

impacts educational quality (Monsang & Srikoon, 2021). With requests for both a larger focuson these subjects and enhancements in the standard of curricula and instruction, STEM education for students has drawn more attention over the past 10 years (Wahono & Chang, 2019).

LITERATURE REVIEW

As Schratz and Symeonidis (2018) contended, numerous huge issues challenge school systems overall and educator training specifically to audit their objectives and educational programs. The most significant of these is the intricacy of quick friendly change and the vulnerabilities and logical inconsistencies that the world is presently encountering. To get ready coming ages of students to handle the normal difficulties of these post-ordinary times, in which realities are dubious, schooling systems must futurize their educational plans (Lotz-Sisitka, 2015).

Many supporters of future-centered schooling (Facer, 2011, 2016; Sardar, 2010a; Butcher, 2015) underscore the significance of coordinating Future studies as a reaction to the expanded eccentrics, confusion, and intricacy in our reality and accept that the techniques as of now used to evaluate understudy progress in perusing, composing, and number juggling is not reasonable for estimating the improvement of development, imagination, and complex critical thinking capabilities (Silva, 2009). In this way, STEM schooling ought to zero in on getting ready students for understanding and carrying out estimating apparatuses and future reasoning abilities in different instructive settings.

The Next Generation Science Standards (NGSS) (the NGSS Lead States, 2013) and Principles for Mechanical and Designing Education (STEL) (ITEEA, 2020) highlight links between an academic subject and its practical application. Coordinated STEM training is the way to deal with teaching the STEM content of at least two STEM areas, limited by STEM practises inside a legitimate setting to associate these subjects to improve student learning (Kelley andKnowles, 2016).

The common acts of science and designing tended to by NGSS include: (1) getting clarificationon some pressing issues and characterizing issues; (2) creating and utilizing models; (3) arranging and doing examinations; (4) breaking down and deciphering information; (5) utilizing arithmetic and computational reasoning; (6) developing clarifications and planning arrangements; (7) taking part in contention from proof, and; (8) acquiring, assessing, and imparting data (NGSS Lead States, 2013, Addendum F). Guidelines for Innovative and Designing Proficiency (STEL) additionally noticed the interconnectivity of STEM subjects and focused on the mixture of innovation and designing practices into incorporated STEM schooling. As per STEL, innovation, and designing practices incorporate frameworks in thinking, inventiveness, making and doing, decisive reasoning, good faith, coordinated effort, and regard for morals (ITEEA, 2020). The center thoughts associating STEM trains and shared rehearses are logical requests and designing plans (Apedoe, 2008; Kelley and Knowles, 2016; Kelley, 2020; Han, 2020; Public Exploration Chamber [NRC], 2011; NGSS Lead States, 2013). As per specialists and the US instructive principles, designing a plan is a subject integrator

in coordinated STEM schooling, and designing and innovation can be a vehicle for science advancing by acknowledging logical requests (Kelley and Knowles, 2016; ITEEA, 2020; NGSS Lead States, 2013).

STEM-BASED CULTURAL TRANSFORMATION

Youngsters will involve STEM for the SD. With STEM for Supportability, youngsters currently realize that cataclysmic events can be forestalled and lives can be saved by means of our 'Earthquake Detection' project. They see the effect of unreasonable cultivating through the 'Sustainable Farm' project. They consider the openness of visually impaired individuals and model a 'Smart Cane' task and handle the significance of saving the planet with the model 'Ocean Cleaning Robot.' what's in store designers and planners who will fabricate urban communities will focus on the environment, the existences of the occupants, and the existences of the creatures nearby and their effect on the world. They will focus on living respectively with the land, not 'of' the land. They will be the changemakers and future pioneers who will make a social change.

Science isn't just an issue of the psyche yet of the heart too. With the 'STEM for Sustainability'approach, future change-producers utilize mechanical progressions, as well as foster social mindfulness, find out about capable direction, practice their heart, and consider the aggregate prosperity of society.



Figure 2: STEM Education will Assist in Sustainable Growth among Children
Source: Image – Twin Science

"In our lessons, we learned how, depending on the angle of the sun shining on the solar panel, it can create more energy. Using this information, we made a solar panel that rotates towards the sun so that we can maximize our solar energy. It has given us the confidence to see what we can do with technology and how it can help us towards a sustainable future".

A student in the UK's Reigate St. Mary's Primary School on the use of STEM-related tools "The truth is the 21st century is going to be a challenging time for the rising generations. So we must equip them with a knowledge of the issues and the skills to deal with problems caused by climate change, such as food security and water scarcity. We need to see STEM For Sustainability integrated into our curriculums just as thoroughly as English and maths are and we need to see that in every school across the country"

~ Marcus Culverwell, Headteacher at Reigate St Mary's primary school, UK

With this strategy, children will use STEM to build the sustainable future that we all need and want.

Table 1: List of Specific SDG Learning Objectives and STEM-based Sustainability Critical Competencies

SDGs' Specific Learning Objectives	*Essential Skills for Sustainability*
The cognitive domain includes the information and critical-thinking abilities required to comprehend the SDG and the obstacles to its realization.	Competency in systems thinking is defined as having the capacity to identify and comprehend links, analyse complex systems, consider how systems are embedded within many domains and sizes, and deal with uncertainty. The capacity to anticipate one's own future, employ the precautionary principle, evaluate trade-offs between options, manage risks, and assess a variety of prospective, probable, and desired futures. The ability to negotiate sustainability ideals, principles, goals, and targets in the face of conflicting interests, flimsy information, and incongruities is referred to as normative competency. Normative competency is the capacity to comprehend and consider the norms and values that guide one's behavior. Strategic competency: The ability to develop and implement creative ideas that promote sustainability at the local and industry levels.
The socioemotional domain encompasses self-reflection abilities, values, attitudes, and reasons that support learners in developing as people, as well as social skills that enable learners to collaborate, bargain, and communicate to promote the SDGs.	The ability to understand, relate to, and be sensitive to people is known as empathic leadership. The ability to learn from others, comprehend and respect the requirements, viewpoints, and behaviors of others, as well as comprehend, relate to, and be sensitive to others, is referred to as collaboration competency. Critical thinking proficiency: The ability to question assumptions, practices, and norms; to reflect on one's own values, perceptions, and behavior; and to take a position in the sustainability discussion. Self-awareness proficiency: The ability to take into account where one fits into their local community and society at large, to continually analyze and reenergize their motivations, and to deal with their feelings and desires.

SDGs' Specific Learning Objectives	*Essential Skills for Sustainability*
The behavioural section describes action competences.	The ability to apply different problem-solving frameworks to complex sustainability issues and to offer viable, equitable, and inclusive solutions that promote sustainable development constitutes integrated problem-solving competency.

CONCLUSION

The global great challenges that STEM education must address have emerged during a period of ambiguity, disagreement, and uncertainty. Given the scientific, post-normal times, and human-centered economy, innovations in the capacity building of STEM education instructors will be more important. STEM educators need to be more aware of the intricate sustainability concerns and current and upcoming global large challenges in order to employ the appropriate methods and approaches. Summary of historical, current, and potential future trends in the study of STEM and educational achievement has been presented by this study. An examination of the top 10 publications brought attention to the significance of "early childhood education" within the context of "quality and STEM education. Considering how much attention "environmental" and "computer education" have gotten. Future research must therefore look into how "early childhood education," "computing education," and "environmental education" affect educational quality. High-ranking publications also gave policymakers' roles a lot of attention. The next step would be to conduct a quantitative analysis based on the study's preliminary findings to develop a broader discussion on how STEM integration may improve educational quality. To better understand how the suggested framework might be successfully applied in a variety of educational settings, more studies with broader perspectives should be done in this growing field of inquiry.

REFERENCES

[1] Bascopé M, Reiss K. (2021). Place-based STEM education for sustainability: A path towards socioecological resilience. *Sustainability*, 13: 8414. doi: 10.3390/su13158414.

[2] Bell, W. (1998). Understanding the futures field. In D. Hicks & R. Slaughter (Eds.), *Futures education: World yearbook of education*. Kogan Page.

[3] Berkhout F, Hertin J. (2002). Foresight futures scenarios: Developing and applying a participative strategic planning tool. *Greener Management International*, 2: 37–52. doi 10.9774/GLEAF.3062.2002.sp.00005.

[4] Bol E, Staring M. (2018). Becoming a future-proof teacher: Futures education integrated into a teacher in the training program. *World Futures Review*, 10(4): 323–326. doi 10.1177/1946756718784002.

[5] Branchetti, L., Cutler, M., Laherto, A., Levrini, O., Palmgren, E. K., Tasquier, G., & Wilson, C. (2018). The I SEE project: An approach to futurist STEM education. *Visions for Sustainability*, 9. 10.13135/2384-8677/2770

[6] Christie CA, Barela E. (2005). The Delphi technique is a method for increasing inclusion in the evaluation process. *The Canadian Journal of Program Evaluation*, 20(1): 105–122.

[7] Dalkey, N., & Helmer, O. (1951). The use of experts for the estimation of bombing requirements: A project Delphi experiment. RAND.

[8] Eurobarometer (2015). Public opinion on future innovations, science, and technology. Eurobarometer Qualitative Study.

[9] Facer K. Learning futures: Education, technology and social change. Routledge; 2011.

[10] Facer K. (2016). Using the future in education: Creating space for openness, hope, and novelty. In: Lees HE, Noddings N, editors. The Palgrave international handbook of alternative education. Palgrave Macmillan, pp. 52–67.

[11] Fuerth L.S. (2009). Foresight and anticipatory governance. *Foresight*, 11(4): 14–32. doi 10.1108/14636680910982412.

[12] Gidley, J., Bateman, D., & Smith, C. (2004). Futures in Education: Principles, practice, and potential. Australian Foresight Institute.

[13] Glenn, J.C. (2003). Introduction to the futures research methods series. In J.C. Glenn & T.J. Gordon (Eds.), *Futures research methodology*. Millennium Project.

[14] Gough A. (2021). All STEM-Ed up: Gaps and silences around ecological education in Australia. Sustainability, 13(7): 3801. doi: 10.3390/su13073801.

[15] Hartmann, C. (2011). From urban foresight to urban futures? Potentials and limitations of forward-looking activities for integrated urban development. In M. Schrenk, V. V. Popovitch, & P. Zeile (Eds.), *Proceedings REAL CORP 2011* (pp. 335–343). Essen.

[16] Henchey N. (1978). Making sense of future studies. Alternatives: Perspectives on society. *Technology and Environment*, 7(2): 24–27.

[17] Inayatullah, S. (2103). Futures studies: Theories and methods. In N. Al-Rodhan (Ed.), *There's a future: Visions for a better world* (pp. 36–66). Banco Bilbao Vizcaya Argentaria (BBVA).

[18] Krug, D.H. (2012). STEM education and sustainability in Canada and the United States. *Conference presentation at the 2nd International STEM in Education Conference*, Vancouver, BC.

[19] Kuosa T. (2011). Evolution of futures studies. *Futures*, 43(3): 327–336. doi: 10.1016/j.futures.2010.04.001.

[20] Leicht, A., Heiss, J., & Byun, W.J. (2018). Issues and trends in education for sustainable development. UNESCO.

[21] Levrini O, Tasquier G, Branchetti L, Barelli E. (2019). Developing future-scaffolding skills through science education. *International Journal of Science Education*, 41(18): 2647–2674. doi 10.1080/09500693.2019.1693080.

[22] Lloyd D, Paige K. (2016). Use of future scenarios as a pedagogical approach for science teacher education. *Research in Science Education*, 46(2): 263–285. doi 10.1007/s11165-015- 9505-7.

[23] Lotz-Sisitka H, Wals AE, Kronlid D, McGarry D. (2015). Transformative, transgressive social learning: Rethinking higher education pedagogy in times of systemic global dysfunction. *Current Opinion in Environmental Sustainability*, 16: 73–80. doi: 10.1016/j.cosust.2015.07.018.

[24] Miller, R. (2003). Where schools might fit in a future learning society (Vol. 129). Incorporated Association of Registered Teachers of Victoria.

[25] O'Donnell C. (2018). Science education, identity, and civic engagement: Empowering youth through the UN sustainable development goals. In: Rold A, editor. G7: The Executive Talk Series Global Briefing Report. *Diplomatic Courier*, pp. 108–116.

[26] OECD (2006). Starter pack: The future thinking in action. OECD Schooling for Tomorrow Series.

[27] Pahnke, J., O'Donnell, C., & Bascopé, M. (2019). Using science to do social good: STEM education for sustainable development. Position paper developed in preparation for the second "*International Dialogue on STEM Education*" (*IDoS*), Haus der Kleinen Forscher, Berlin. https://innovec.org.mx/home/images/positionpaper-idos2019- usingsciencetodosocialgood.pdf

[28] Rehman, O.U., Ryan, M.J., & Efatmaneshnik, M. (2017). Future-proofing process. Conference presentation at the *27th annual international INCOSE symposium*, Adelaide, Australia.

[29] Samuel S.J.I., Thamburaj K.P. (2015). Promoting scientific ideas through future studies in Tamil language teaching. *Procedia Social and Behavioral Sciences*, 174: 2084–2089. doi: 10.1016/j.sbspro.2015.02.005.

[30] Sardar Z. (2010). Welcome to post-normal times. *Futures*, 42(5): 435–444. doi: 10.1016/j.futures.2009.11.028.

[31] Sardar Z. (2010). The namesake: Futures; futures studies; futurology; futuristic; foresight—What's in a name? *Futures*, 42: 177–184. doi: 10.1016/j.futures.2009.11.001.

[32] Schratz M, Symeonidis V. (2018). Transnational perspectives of transformative teacher learning in an emerging Europe. *Center for Educational Policy Studies Journal*, 8(3): 7–12. doi: 10.26529/cepsj.593.

[33] Silva E. (2009). Measuring skills for 21st-century learning. *Phi Delta Kappan*, 90(9): 630–634. doi 10.1177/003172170909000905.

[34] Slaughter R.A. (2015). Beyond the global emergency: Integral futures and the search for clarity. *World Futures Review*, 7(2–3): 239–252. doi 10.1177/1946756715597522.

[35] Suh H, Han S. (2019). Promoting sustainability in university classrooms using a STEM project with mathematical modeling. *Sustainability*, 11: 3080. doi: 10.3390/su11113080.

[36] Tanenbaum, C., Gray, T., Lee, K., Williams, M., & Upton, R. (2016). STEM 2026: A vision for innovation in STEM education. US Department of Education. https://oese.ed.gov/files/2016/09/AIR-STEM2026_Report_2016.pdf

[37] Ulmeanu M-E, Doicin C-V, Spânu P. (2021). Comparative evaluation of sustainable framework in STEM intensive programs for secondary and tertiary education. *Sustainability*, 13: 978. doi: 10.3390/su13020978

[38] Velázquez F. Del, Cerro RFL (2020). Education for sustainable development in STEM (technical drawing): Learning approach and method for SDG 11 in classrooms. *Sustainability*, 12: 2706. doi: 10.3390/su12072706.

[39] Voros J. (2001). A primer on futures studies, foresight and the use of scenarios. *Prospect, the Foresight Bulletin*, 6: 1023.

[40] Voros J. (2003). A generic foresight process framework. *Foresight*, 5(3): 10–21. doi 10.1108/14636680310698379

[41] Walonick, D.S. (2010). An overview of forecasting methodology. http://www.statpac.com

Upasana – Expediting Planet's Journey Towards a Sustainable Future

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Abstract

The textile industry has its negative environmental impact on groundwater, soil, and air. Its negative global environmental impact will be around 2791 million tons of CO2 emissions, 118 billion cubic meters consumed water, and 148 million tons of textile waste in 2030 (GFA & BCG, 2017). India is a major contributor for apparel manufacturing and around 60% of the total garments, consumed by individuals around the world are produced by Pakistan, Bangladesh, and India (Gugnami & Mishra, 2012). India is one of the most polluted countries in the world and 30 Indian cities are in the top 100 most polluted global cities' list (WHO, 2016). Thus, sustainability is the need of the hour. Undoubtedly, fashion industry has introduced sustainability in its products, production processes and packaging as well. The present paper adopted case study method to analyse the initiatives taken for sustainability in the fashion industry by a sustainable brand named 'Upasana'. From this analysis various initiatives taken by the company has been identified. Moreover, the features, benefits and challenges related to conscious clothing has been explored. Various ways to promote conscious clothing have also been suggested.

Keywords: Sustainability, Conscious Clothing, Upasana

INTRODUCTION

Working for a sustainable future, Uma Prajapati once realised the contribution of fashion in planet earth's journey towards a sustainable future. She looked at the mistakes that human beings have made in the fast-paced lifestyle and came out with the idea of discovering India with the help of textile with a special focus on traditional Indian designs, natural dyes and traditional Indian textiles. She created conscious sustainable fashion brand and named it as Upasana. By introducing 'Upasana' she emphasized on the effort that every individual on this planet can make to reduce the environmental cost that planet earth is paying since the introduction of fast fashion. The problem with fast fashion clothing is excessive use of water, use of plastic microfibers, reliance on non-renewable energy and surge in consumption of clothing but she worked on these problems and came out a solution for the same by introducing conscious sustainable clothing.

BACKGROUND

Uma Prajapati, an entrepreneur and a social activist carry out a business with a mission to have sustainable living on this planet. She created a fashion garment company and named it as 'Upasana Design Studio' in Auroville. She came with an idea to protect the environment through fabrics so as to handover a pollution free environment to the future generations. She was born and brought up in Gaya, Bihar. To pursue her graduation, she came to Delhi and completed her fashion designing from National Institute of Fashion Designing, Delhi. One day, while attending an exhibition in Pragati Maidan in New Delhi she visited a stall where Auroville had its exhibition. She was impressed by Auroville and talked about her wish to visit that place with her parents. For a woman who is from a middle-class family, it is difficult to convince her parents that she wants to explore the world that is outside the four-walls that they provided her. She decided to write about her wish to visit Auroville and people from that Auroville stall accepted her request to visit Auroville.

In 1996, she went to Auroville and soon she decided to stay there. She realised that Auroville was a place where she can showcase her skills as a designer. In 1997, she settled there and joined a small garment unit. Very soon she started her own company and named it as Upasana with a sum of Rs. 2,000 only.

UPASANA'S JOURNEY FOR ESTABLISHING SOCIAL BUSINESSES FROM AUROVILLE

In the year 2001, Upasana came out with a Social Constructive Programs for individuals in Bhuj, Kutch. The city was devastated by earthquake in the same year and in order to help individuals who were affected by this earthquake, Upasana trained many individuals. Individuals were helped by imparting skills that helped them to change their lifestyles which resulted in women empowerment, sustainable economic practices while preserving culture, values and tradition of individuals in Bhuj, Kutch. By this time Upasana had developed its clear philosophy of discovering its country through textiles with a special focus on traditional Indian textiles, chemical -free dyes and traditional Indian designs.

In continuation to its effort to achieve sustainable living Upasana commenced its Conscious Fashion Hub. In this regard, various workshops and training programs were conducted for students in the field of designing and education. The idea behind these workshops were to promote the theme of fashion and recycling. Research work was also conducted with an intention to synthesize traditional designs of textiles and clothing.

In 2004, tsunami wave in the Indian ocean badly hit the southern coast. Tsunami badly affected the fishing villages in Puducherry and women were so distressed about their future and looking emptily towards others. Prajapati was upset after looking at these women so she offered them her hand to get out of this situation. She explained them that by making dolls they themselves can help them by igniting fire of hope in their minds. She taught them how to make dolls. After learning about the same the fisherwomen started making dolls with the garment waste. This garment waste which was used as a raw material to make dolls was

brought from Upasana. These tiny dolls were named as 'Tsunamika' and later on, this idea was taken to several other fishing villages in Puducherry. Now, more than five million dolls are made and sent to 80 countries. These tiny dolls are based on 'gift economy' concept. It means these dolls were made not to sell but to give as gifts. The receiver of the gift can make donation as per his/her capacity. It was this situation that turned Upasana from garment business to socially-conscious business. This Tsunamika project succeed through community support as people from our community take dolls and make contribution as per their capacity. Tsunamika project has got the 'Award of Excellence' by the Government of India. It has also got a special recognition by UNESCO.

In 2006, Upasana started working with weaving communities of Varanasi and introduced a brand named as 'Varanasi Weavers'. The intention behind involvement of weavers was to encourage weaver's communities. Upasana worked with the community in terms of designing, marketing and communication. This project got recognition by UNESCO. Upasana has taken Varanasi to the global level where many brands worked in support of the weaver's community.

To protect the environment from plastic Upasana took another initiative which was named as 'Small Steps'. In this project Prajapati introduced compact bags which can be used as a better alternative to plastic bags. Thus, she supported and protected environment by introducing an environment friendly alternative. This initiative not only helped to protect the environment but also helped in women empowerment, making our country a green place to live and also inspired youth. This is how Upasana became a social business in the year 2007.

Upasana also worked with cotton communities of Tamil Nadu in 2008. Prajapati named this project as Kapas. She introduced this project to promote and support cotton communities of Tamil Nadu and families of Madurai. She observed that rate of suicide among farmers was rising due to decline in the farming of organic cotton. Modern cotton farming methods were replacing organic cotton farming thus farmers were trying to introduce modern methods of cotton farming but it was difficult for them to cope up with the modern methods which resulted in rise in suicides among farmers. Thus, to control the situation Upasana introduced and promoted organic cotton farming again and became a ray of hope among weavers.

In 2009 Upasana introduced Tranquebar in partnership with Bestseller Fund, INTACH (Indian National Trust for Art and Cultural Heritage), and Saint Joseph Development Trust. Due to Tsunami in 2004 Tranquebar was devastated in terms of its town architecture and the lives of people who were living in that region. To deal with this social problem Upasana came up with another project to develop Tranquebar as a cultural tourism destination due to its rich heritage. This project not only helped to develop the region but also helped the local people in terms of enhancement of their skills in craft. They were also supported in terms of marketing of their merchandise. The concept of homestays was also highlighted so as to increase income of local population.

To support organic cotton farming community Upasana also introduced another project called Paruthi in 2011. Paruti means cotton in Tamil. To promote sustainable future Upasana helped farmers by introducing garments for men, women and kids. Upasana also introduced

yoga-wear, accessories and home furnishing. By introducing Paruthi, Upasana positioned itself as an organic and sustainable venture as the company has switched to 100 percent organic cotton. Thus, Prajapati completely supported responsible fashion in this era of fast fashion.

To support the concept of house of conscious living, Upasana introduced Janaki in 2012 as its initiative to sell home furnishing and organic food in Pondicherry. Janaki communicated the message of importance of living a sustainable lifestyle. Janaki is based on the idea of considering Indian grandmother as a wisdom tree in the family. If sustainability is accepted by her then it will be automatically communicated to the future generations to come. Thus, by introducing Janaki Upasana supported and promoted a conscious living and healthy lifestyle.

In 2021 Upasana sown the seed of Conscious Clothing Circle of Auroville. The company started designing clothes from organic cotton, introduced many other things such as handloom textile, upcycled processes, natural dying, block printing and healing fabrics as well. At each stage fair trade and ethical consumption was promoted and thereby promoting a sustainable future for the upcoming generations.

FEATURES OF UPASANA'S CONSCIOUS CLOTHING

1. Handloom textile
2. Upcycled processes
3. Natural dying
4. Block printing and
5. Healing fabrics

BENEFITS OF CONSCIOUS CLOTHING

Fast Fashion garments ends up in landfills which creates pollution as it takes a long time to decompose such garments. There are other problems which arise due to this industry such as illegal dumping of waste, release of microplastics in the environment, excessive use of water, reliance on non-renewable resources and use of plastic microfibers which negatively effects the environment. To reduce this negative impact on the environment, conscious clothing has been introduced by Upasana. They have introduced such clothes which are manufactured using natural dyes, block printing, handloom textiles, healing fabrics, and upcycling processes. Thus, various benefits of such conscious clothing have been identified:

1. Conscious clothing reduces carbon footprints as they are manufactured with renewable energy.
2. As Conscious clothing lasts for a longer period of time it helps to save money so they are pocket-friendly.
3. Conscious clothing also helps to reduce waste as sustainable fabric are durable so less frequent purchases are required and ultimately it leads to a smaller number of clothes causing landfills.

4. Producing Conscious clothing takes care of the workers engaged in its manufacturing process as they are provided with fair and safe working conditions and also, they get fair payment of wages.
5. Conscious clothing also helps and support local brands hence it makes traditional craftmanship alive on the planet and it leads to money flow within the local economy.
6. Conscious clothing is made from recycled or natural materials which is bio-degradable which is easy to decompose so it reduces environmental impact.
7. Above all Conscious clothing helps to achieve sustainability in circularity and it is one of the major steps that contributes to achieve Sustainable Development Goals (SDGs).

CHALLENGES TO ENCOURAGE PURCHASE OF CONSCIOUS CLOTHING

1. Lack of Awareness is a big challenge. As consumers are aware so it is really difficult for companies to make this initiative a bid success. Some of the Consumers in India are price-sensitive so may not like to purchase conscious clothes as affordability is an important aspect for them to look upon.
2. Conscious clothing involves high production cost. Production cost is high cost of sourcing raw materials. Sustainable materials such as organic cotton and recycled polyester fibres are expensive as compared to traditional materials used in clothing. Moreover, production practices such as payment of fair wages, use of non-toxic dyes and reduced water consumption are major contributors to increase costs.
3. Changing consumer's sentiments is a big challenge for fashion companies. These companies have to work out on ways to change not only the mindset of consumers regarding conscious clothing but changes are also required on the part of consumer's habits. This shift in consumer's sentiments can only drive innovation in the fashion industry and can motivate fashion companies and designers to look for more creative ways to create conscious clothes and that too without any sacrifice on the style or quality aspect.

SUGGESTIONS

1. Upasana has to work to promote conscious clothing. The company have to make consumers aware and educate about conscious clothing.
2. To promote and support conscious clothing company have to collaborate with policymakers and marketers so that environment could be saved for future generations.
3. Company has to understand the consumer's sentiments. Efforts have to be made on changing the consumer's mindset regarding the impact of their choice of clothes on environment then only they can bring changes in their habits.
4. In order to promote conscious clothing, company have to advertise its clothing articles through various platforms like television, newspapers, fashion magazines, and above all social media.

5. Company has to educate consumers regarding price aspect also. As many consumers prefer affordability over sustainability.

CONCLUSION

Sustainability is not a passing trend it is timeless and gaining popularity gradually. Although fashion industry is one of the major contributors to pollution and environmental degradation. However, now fashion industry is shifting its path from cheap and speedy production to sustainable materials and sustainable production processes. Upasana is one of its kind to make this shift a reality. It has taken various initiatives such as Social Constructive Programs, Tsunamika, Conscious Fashion Hub, Varanasi Weavers, Small Steps, Kapas, Paruthi and Conscious Clothing Circle to prioritise sustainability and making consumers more conscious for the same by launching its range of conscious clothing articles.

REFERENCES

[1] GFA, and BCG (2017). Pulse of the fashion industry. https://globalfashionagenda.com/ wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.p

[2] Gugnami, A., & Mishra, A. (2012). Textile & apparel compendium 2012. Technopak.

[3] WHO (2016), "Ambient air pollution: A global assessment of exposure and burden of disease", available at: http://apps.who.int/iris/bitstream/10665/250141/1/9789241511353-eng.pdf?ua=1 (accessed June 2023).

[4] https://timesofindia.indiatimes.com/blogs/voices/the-challenge-of-sustainable-fashion/ (accessed June 2023).

[5] https://www.futurescape.in/the-greatest-challenges-to-sustainable-fashion/ (accessed June 2023).

[6] https://news.climate.columbia.edu/2022/11/28/the-challenge-of-sustainable-fashion/ (accessed June 2023).

[7] https://www.dtnext.in/city/2019/11/22/auroville-firm-upcycles-fabrics-to-give-livelihood-to-women?infinitescroll=1

[8] https://www.thebridgechronicle.com/lifestyle/art-culture/fashionably-conscious-30382

[9] https://yourstory.com/2013/10/tsunamika-upasana-uma-prajapati

[10] https://www.upasana.in/

Author Index

Aggarwal, Komal 35
Ahmed, Tabassum 35, 122
Ahuja, Narita 416
Alamoudi, Muaad 279
Anjali 336

Bhatia, Monika 14
Bindra, Kaina 14
Bindra, Sunint 538

Chindaliya, Sakshi 180
Cummings, Derrick 279

Daglia, Mitul 281
DeRoo, R. Bruce 465
Divya 407
Dwivedi, Divya 503

Gahlawat, Monika 296
Garg, Meenakshi 227
Garg, Shelly 520
Gaur, Arti 97
Geeta 112
Ghosal, Anuradha 487
Gupta, Niraj 195
Gupta, Sakshi 520

Hooda, Sanjay Kumar 429

Joon, Bhawna 240

Kapoor, Sanya 161
Karambir 3
Kataria, Himanshu 64
Kaur, Amarjeet 161, 359, 538
Kaur, Kamal Preet 97
Kaur, Mandeep 538
Kaur, Neetu 525
Khanna, Falak 14, 210, 317
Khatana, Nikita 310
Kumar, Brijesh 442
Kumar, Jitendra 476
Kumar, Naveen 270, 381
Kumar, Neeraj 270
Kumar, Pawan 270
Kumari, Krishna 189
Kumari, Rekha 147

Liu, Jiangxia (Renee) 469

Maguire, Daniel J. 465
Mahesh 261
Mahlawat, Seema 261, 310
Malhotra, Neha 416
Malik, Vidushi 64
Mathur, Richa 248

Nagpal, Nancy 21
Nisha 21, 347

Pathak, Sonal 525
Pinar, Musa 279
Pooja 210
Punia, Priya 112

Rana, Taruna 161, 359
Rani, Ankur 21
Rao, Pyla Narayan 218
Rashmi 325
Ritu 310, 347

Sanchit 240

Sangwan, Ramniwas 455
Sanjna 48, 392
Santpal 429
Sarita 194, 218
Sharma, Komal 381
Sharma, Priti 3
Shikha 73
Sikriwal, Preeti 325
Singh, Joginder 455
Singh, Shambhu Sharan 122
Sirohi, Naveen 147
Somveer 381
Soni, Kapil 194, 195

Tandon, Deepak 180
Tandon, Neelam 180
Tripathi, Gunjan 73

Verma, B.L. 281
Verma, Nidhi 503

Wade, Aden 279
Wadhwa, Rajesh 90
Wooton, Emily 279

Yadav, Ankita 325
Yadav, Anshita 261, 336, 407
Yadav, Narpal 455
Yadav, Reena 161, 359
Yadav, Ritu 122, 189

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   (d) False citation: material should not be attributed to a source from which it has not been obtained
   (e) False data: data that has been fabricated or altered in a laboratory or experiment; although not literally plagiarism, this is clearly a form of academic fraud.
   (f) Unacknowledged multiple submission of a paper for several purposes without prior approval from the parties involved.
   (g) Unacknowledged multiple authors or collaboration: the contributions of each author or collaborator should be made clear.
   (h) Self-plagiarism/double submission: the submission of the same or a very similar paper to two or more publications at the same time.

E. Manuscript Guidelines

1. Fonts
   - Font Type: Times New Roman Font Size (Text): 12
   - Font Size (Tables and Figures): 12

2. Paragraph
   - Alignment: Left
   - Outline Level: Body Text
   - Indentation: Left: 0
   - Right: 0
   - Spacing: Before: 0 After: 0
   - Line Spacing: Double
3. Page Setup Margins
   - Top: 2.5 cm
   - Bottom: 2.5 cm
   - Left: 1.5 cm
   - Right: 1.5 cm
   - Gutter: 0
   - Paper Size: Letter
4. Structure of Paper
   - Abstract with Key words
   - Introduction
   - Literature Review
   - Research Method
   - Analysis and Discussion
   - Conclusion
   - Limitations of the Study
   - Scope for Further Research References
5. Word Count
   - Article/ Research Paper/Case Study: 6000 words maximum

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