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Book Review

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Message

From the Vice Chancellor



I am indeed extremely happy to learn that the Department of Management, Gurugram University is bringing out the second issue of the Volume one of its bi-annual international research journal named Gurugram University Business Review (GUBR). It is heartening to note that the journal is maintaining good quality publication standards and has received E-ISSN after the publication of its first issue itself.

When I joined the Gurugram University in December 2021 as Vice Chancellor; I envisioned raising the academic standards of the University including bringing the University under section 12(b) of the UGC, which in turn is expected to help create a research culture in the University. The journal-GUBR, published by the premier department of the University gives me assurance in fulfilling my vision for the

University as a journal is a showcase of the knowledge created and published by any academic Institution. Albeit, there can be no better platform than publishing a research journal where everyone can add valuable insights to the existing body of knowledge.

I hope that the journal will help us achieve our vision and would help in disseminations of original unpublished and solution-oriented research in diverse multi-disciplinary domains; as the journal has a very strong national and international advisory board. I also see this journal as a medium to strengthen our newly launched Ph.D program. I also wish to see the journal becoming part of good research data-bases and also citation indexes of repute.

Lastly, I would like to congratulate the Department of Management and the editorial team of the journal in particular for their endless efforts towards perpetual improvement in the quality of this International journal. I am sure GUBR will grow by leaps and bounds under the able leadership of its Editor-in-Chief, Dr Amarjeet Kaur.

Wishing GUBR a grand success!

Prof. (Dr.) Dinesh Kumar
*Patron – GUBR & Vice Chancellor,
Gurugram University, Gurugram*



Foreword



A research journal is still perceived as an important and robust method of publishing despite innovations in the area of communication with regard to research work. It is through research journals that the exploration, including its logical and viable commitments, is dispersed to others in a specific field. This helps researchers with common interests to seek knowledge in their field and it assists with propelling information and its application. Publishing puts your research into larger context. Publishing helps establish you as an expert in your field of knowledge. Peer-reviewed publication provides evidence that helps in the evaluation of merit of research funding requests and adopting the research in industry. Gurugram University Business Review (GUBR) brings forth a platform for researchers to share blindly peer-reviewed knowledge in varied areas related to business and corporate world.

GUBR publishes both empirical and conceptual articles with an objective to advance knowledge creation and dissemination in fields such as strategy, international business, organizational behavior, accounting & finance, human psychology, resource management, entrepreneurship, innovation, machine learning, data analytics, information technology and critical management studies. GUBR has an inclusive ethos and is open to a wide range of methodological approaches and philosophical underpinnings. GUBR is a globally respected multidisciplinary international journal which provides an international forum for exchange of ideas and findings from researchers across different cultures.

In this pursuit, I extend my immense gratitude to Prof. (Dr.) Dinesh Kumar, the Hon'ble Vice Chancellor of the Gurugram University for his worthy guidance and encouragement and also for having such a strong trust in the capabilities of the editorial team.

This is a matter of importance to acknowledge the contribution made by the very dedicated team of editors led by Dr. Monika Bhatia for their unflinching efforts in bringing out the second issue of the Journal. I would also congratulate the editorial team for getting the E-ISSN for the journal in such a short span. I will urge the team to work hard to get the journal listed in citation databases of repute.

A journal is what is made by authors of its articles, albeit; I owe my sincere thanks to all the contributors of this journal. I feel privileged and humbled to be associated with GUBR which will constantly thrive upon high quality of research.

Happy Learning!!

Prof. (Dr.) Amarjeet Kaur
Editor-in-Chief



Editorial Note

Research is a consistent attempt to resolve the questions pondering the human mind and here we present the second issue of Gurugram University Business Review (GUBR) an international bi-annual peer reviewed journal published by the Department of Management, Gurugram University Gurugram.

The journal has been thoughtfully divided into two sections including (i) Research Papers; (ii) Book Review. The first section targets to publish empirical as well conceptual research articles related to various facets of business in a global context. Section two presents book review.

The first section included eleven research papers dealing with various facets of business and management. The book review section reviewed a very interesting book on learning phases.

The first paper by Dr. Sanjay Kumar, Dr. Priyantha Devapriya and Dr. Jiangxia Liu has made an attempt to address the very important allied area of management, i.e. disaster management. The study analyzes an emergency evacuation strategy under a natural hazard with a rescue vehicle parked at a base station. The study explores properties of solution space to design several practical methods that could be used in realistic scenarios. This study is helpful for the researchers for comparing the applications of solution space under natural and man-made calamities.

The global pandemic has changed the functioning of offices. The second paper by Dr. Nidhi and Ms. Arti examines the effect of work-home interface on Job satisfaction. A comprehensive analysis had been done to understand the data through PLS-structural equation modelling. The study also provides policy recommendations so that the professionals can make a balance during work from home.

In the next paper, Ms. Puja Verma presented an empirical study to examine the impact of precarious work on teachers' well-being and teaching attitudes. The paper has included the teachers working in higher education institutions in the National Capital Region on various temporary positions. Precarious job has a considerable detrimental impact on teachers' well-being in terms of anxiety, ill-health, despair, and psychological discomfort.

Fourth paper by Dr. Praveen Gujjar J. and Mr. Prasanna Kumar focuses on generation of association rule using Apriori algorithm. This generated rule can be used for the market analysis, product recommendation and demand forecasting. Association rule has been generated with the help of support and confidence and has been applied to superstore dataset.

In next paper, Dr. B.L. Verma and Dr. Sachin Gupta investigate the influence of entrepreneurial, company-specific, and outer environment-related aspects on the ability of competitiveness in Indian technology-based startups. The study utilizes success survival analysis methodology to analyse the data by taking start-up success rate as a benchmark. The study recommends technology-based startup owners and policy-makers to make required changes in their policy-making and strategy to improve the competitiveness of the technology-based startups functioning in our country.

The sixth paper by Dr. Anshu, Dr. Naveen Kumar and Mr. Kapil Ahuja employs the SERVQUAL model to recognize the gap between borrower's expectations and perception of the financial institutions in India. Results of the review illustrated that borrower's expectations are higher from the private institutions and the degree of fulfillment is additionally high. To fulfill the borrowers' expectations the public institutions should work on the significant dimensions of service quality, i.e. Empathy, Assurance and Reliability.

In seventh paper Dr. Hilsa Mishra and Dr. Puja Chhabra Sharma attempted to explore the opportunities extended by the Covid-19 pandemic. This study recognized the positive impact of pandemic on the telecom Industry. The study synthesizes knowledge from existing body of literature on the topic and concludes a positive relationship between the observed growth of the telecom industry and the pandemic.

Eighth paper by Ms. Teena and Dr. Babita Jaiswal is providing insights on the challenges put forward in the marketing activities of different sectors by the Covid 19 pandemic. This study also highlights the changes in marketing practices. The study also discussed the ways to convert these challenges into opportunities.

Dr. Sampann Patodi and Dr. Kuber Sharma explore the impact of substandard loans on the performance of the Public Sector and Private Sector banks in the ninth paper. The study applied the regression model and explains that the 94.1% variation in net income of Indian Banks is due to substandard loans

In the next paper Dr. Rameesha Kalra, Dr. Surekha Nayak and Dr. Manu KS discusses the ways to build human resilience in order to tackle future pandemics. The paper also offers useful suggestions to the Government and policy makers in building human and community resilience in order to fight pandemics in future. The study suggests to look at current pandemic as an opportunity instead of just a problem to evolve into a stronger and resilient society who can face future pandemics with ease.

In the eleventh paper Dr. Poonam Sethi, Dr. Lovleen Gupta and Dr. Srishti Jain studies the factors driving the decision making of the students while investing in the stock market and its impact on their portfolio performance by applying structured equation models. The factors have been classified into behavioral finance factors and non-behavioral finance factors. The findings suggest that the portfolio performs better when the decisions are driven by non-behavioral factors.

In the book review section, Dr. Somveer has reviewed a very interesting book entitled ‘The Monk Who Sold His Ferrari’ authored by Mr. Robin Sharma. The core of the book is the Seven Virtues of Enlightened Learning. This will help people to do brilliant work, thrive amid change and realize their highest leadership capacities within the organization so that personal responsibility, productivity, ingenuity and mastery soar. Reviewer gave this book a must read recommendation for anyone who is interested in incorporating routines and habits that can transform their lives, help them achieve their dreams, calm them and make them more happy.

Our sincere thanks to all the authors for their contribution in way of research articles. Our sincere gratitude to our Editor-in-Chief Prof. (Dr.) Amarjeet Kaur for her incessant guidance and support in publishing this issue of GUBR. We would like to express our heartfelt gratitude to Prof. (Dr.) Dinesh Kumar, the Patron and Vice-Chancellor, Gurugram University, Gurugram for his guidance and continuous inspiration. We sincerely hope that this issue GUBR will be immensely valuable and thought-provoking for the readers.

Dr. Monika Bhatia
(*Editor*)

Dr. Hawa Singh
Dr. Naveen Kumar
(*Associate Editors*)



A Model to Optimize Emergency Resource Effectiveness

Sanjay Kumar¹, Priyantha Devapriya² and Jiangxia Liu¹

ABSTRACT

This paper analyzes an emergency evacuation strategy under a natural hazard with a rescue vehicle parked at a base station. The objective is to find a path for the rescue vehicle to serve the maximum number of time-constrained geographically separated locations. We explore properties of solution space to design several practical methods that could be used in realistic scenarios. A genetic algorithm-based heuristic is used to find a near-optimal solution to maximize the number of nodes served. A genetic algorithm-based solution outperforms a myopic method by 40%. An upper bound is given to evaluate the genetic algorithm performance. The model has applications under natural and man-made calamities. Applications involving an ambulance, fire-fighting equipment, and humanitarian & medical devices could benefit from our model.

Keywords: Emergency Evacuation, Genetic Algorithm, Flow Shop Scheduling

INTRODUCTION

During the last decade, the world experienced many disruptive events, causing immeasurable property damage and deaths. Some of them were natural hazards, while others were man-made disruptions. In an unfortunate event of such a hazard, saving lives depends on the best use of limited resources. This paper presents an emergency evacuation model (EEM) that analyzes the evacuation needs of personnel. Examples of such conditions may include the need for an ambulance or life-saving resources such as medicine, blood, or food supplies. The model's objective is to maximize the number of service nodes that may correspond to the number of personnel that can be rescued.

The general problem description is as follows. Let a known number of people be trapped at different geographical locations. Each location has a time-sensitive service need. The person may not survive if the service is not rendered within the specific time window. Let this time be denoted by *expiration time*. For example, a trapped person can know the time before being drowned by the rising water level in a hurricane. Each site provides a time within which the service must be rendered. For example, a rescue vehicle, a coast guard with a helicopter and ambulance, is stationed at a base station. The rescue operator receives calls from

trapped locations asking for help. The rescue operator has complete information about the site of each trapped person and knows the time it takes to reach each of the requested service locations. The objective is to find a path that maximizes the number of sites served. The number of locations served may correspond to the number of lives saved. The rescue vehicle must reach him before the expiration time to serve a location.

One of the earliest studies in evacuation modeling is Chalmet et al. (1982). They study the problem of evacuating people from a large building over a limited time and find the likely places where bottlenecks might occur. This study uses network optimization techniques for evacuation planning. Among the three models presented in the paper, the most general dynamic model minimizes the average evacuation time and maximizes the total number of evacuees exiting each period.

Sherali et al. (1991) analyze the problem of locating shelters such that the total congestion-related evacuation time (highway network clearance time) is minimized in hurricane-induced floods conditions. The problem is formulated as a non-linear mixed-integer programming model with a heuristic, and an enumeration algorithm is proposed. The model selects shelters from a set of candidate locations and prescribes an emergency evacuation plan under available resource constraints.

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Yamada (1996) studies the city emergency evacuation planning as a network flow problem. The study's objective is to assign each residential area in each city to a refuge place in anticipation of a major disaster. The total distance of evacuation is minimized under the capacity constraint for each refuge. The proposed evacuation plan is compared to the existing evacuation plan in Yokosuka city, Japan, to evaluate the distance savings of the new program.

Schutten et al. (1996) address the issue of scheduling jobs on a single machine with release dates, due dates, and family setup times to minimize the maximum lateness. They develop a branch-and-bound algorithm that solves almost all instances up to 40 jobs optimally. Our study analyzes the EEM as a single machine scheduling problem with sequence-dependent setup times, a well-known NP-hard problem.

Tan and Narasimhan (1997) analyze the problem of minimizing tardiness on a single machine with sequence-dependent setup times. They use simulated annealing to address the problem and compare the results with random search. Sun et al. (1999) analyze a single-machine scheduling problem with sequence-dependent setup times to minimize the total weighted squared tardiness. Considering setup times as a capacity constraint, they propose a Lagrangian relaxation-based approach.

The rest of this paper is organized as follows. In section 2, notations are defined with examples to motivate the analysis of EEM. In addition, assumptions made during the analysis of EEM are outlined. In section 3, a nonlinear programming model is formulated for the EEM. In section 4, an upper bound for the EEM is developed. In section 5, a myopic heuristic is designed to find a fast approximate solution. Section 6 outlines a genetic algorithm-based method to find a near-optimal solution to the EEM. The results of a detailed computational study are presented in Section 7. Finally, section 8 concludes the study with research extensions of the EEM.

NOTATIONS AND DEFINITIONS

Let $N = \{0, 1, 2, \dots, n\}$ be the set of n trapped personnel in a 2-D plane with 0 denoting the base station and t_i be the time-left for i^{th} trapped person, where $i = 1, 2, \dots, n$. Let τ be the distance matrix and τ_{ij} be the travel time between i^{th} and j^{th} trapped location. The distance matrix is assumed to be known, and a constant unit speed of travel per unit time is assumed for the rescue vehicle.

Furthermore, once a trapped person is reached by the rescue vehicle, servicing the location may consume some time. Let s_i be the serving time of the i^{th} trapped person. s_i is assumed to be identical for each i . Without loss of generality let $s_i = 0$ for $i \in N$.

Let G be an undirected graph with a node-set N and arc set $A = \{a_{ij} : i \neq j\}$, where $i, j \in N$. The EEM can be represented by a graph G with $n + 1$ nodes representing n trapped persons with the node $i = 0$ representing the base station. An arc on G represents a path in EEM either from the base station to trapped persons or between two trapped persons. The cost of each arc a_{ij} is given by τ_{ij} . A feasible solution to the EEM is characterized by a path σ in G , which starts from node 0 and visits each node exactly once. Let $\sigma(i)$ be the i^{th} node representing the i^{th} trapped person in the path σ . Visiting a node more than once is not a characteristic of the optimal solution. The optimal solution to EEM corresponds to a path in G that visits a maximum number of nodes before the time-left of each of those elapses.

The structure of the EEM is different from that of the classical vehicle routing problem with time windows (VRPTW). The minimum distance path connecting the base station to all trapped persons could not optimize the EEM. In EEM, likely there exist multiple optimal or near-optimal solutions corresponding to different paths. The EEM can more appropriately be seen as a single machine flow shop problem with sequence-dependent setup times and identical processing times. Let us consider the j^{th} trapped person on the path σ . Along σ , if j immediately follows i , the setup time of j^{th} trapped person is equal to $\tau_{(i,j)}$ and the completion time of the

j^{th} trapped person C_j is given by $\sum_{i=0}^{j-1} \tau_{\sigma(i)\sigma(i+1)}$, which is

path-dependent. The condition $\sum_{i=0}^{j-1} \tau_{\sigma(i)\sigma(i+1)} \leq t_j$ must

be satisfied to save the j^{th} trapped person. For every sequence, the objective value can be different. Thus, EEM is a variation of the traveling salesman problem. Given an EEM with n trapped persons, there are $n!$ distinct sequences to find the optimal solution. For large n , EEM becomes NP-hard.

Let G' be the graph representing an EEM with $n + 1$ nodes and $\tau_{0j} > t_j$ for $j \in K$, where $K \subset N$. Thus, there exists a set of trapped persons K , which cannot be saved since they are located far away from the base station. In this paper, without loss of generality, the constraint $\tau_{0j} \leq t_j$ is imposed for $j \in N$ to ensure that each trapped person

can be saved if the rescue vehicle directly reaches them from the base station. This constraint also implies that, in the worst case, if available, n rescue vehicles can save all n trapped persons. On the other hand, any given G' can be reduced to a graph G with $\tau_{0j} \leq t_j$, for $j \in N$ by deleting the node-set K and the entire arcs incident on nodes $j \in K$. This reduction can be seen as a preprocessing of a given data set that improves the optimization task.

On the other hand, it can easily be proven that this deletion does not affect the solution's optimality. In the context of the emergency evacuation model, the reduction of the graph G' to graph G has the following interpretation. Any nodes represent situations where a person is trapped at a far-off location such that even a direct trip from the base station can't save them. The example given below explains the above concept using a small EEM.

Example 1: Consider an EEM with 3 trapped persons with $t_1 = 5$, $t_2 = 2$, and $t_3 = 13$. The distance matrix is given in Table 1. The graphs G' and G are shown in Figure 1.

Table 1: Distance Matrix for Example 1

	0	1	2	3
0	0	4	3	5
1	4	0	6	8
2	3	6	0	4
3	5	8	4	0

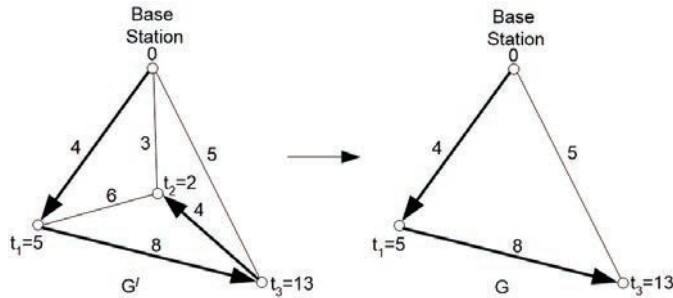


Figure 1: The Reduction of the Graph G' to Graph G in Example 1

For graph G' , the optimal path, which saves 1st and the 3rd trapped persons, is $0 \rightarrow 1 \rightarrow 3 \rightarrow 2$ with an objective value of 2. Even if the rescue vehicle starts its tour by first visiting the 2nd trapped person, the person cannot be saved. Since the distance matrix obeys the triangular inequality, no other path in G' from node 0 to node 2 has a shorter distance than the arc $0 \rightarrow 2$. Thus, the graph G' can be reduced to a graph G by deleting node 2 and the entire arcs incident on it. After reducing G' to G the optimal solution remains at 2 people saved. In addition,

reduction exponentially reduces the search space (for this problem 4! to 2!).

A NONLINEAR PROGRAM FOR EEM

In this section, a nonlinear program is developed to solve relatively small problem instances of EEM optimally. Let $R = \{N \setminus 0\}$, where $N = \{0, 1, 2, \dots, n\}$, and M be a big positive integer. Let T_j be the time epoch at which the rescue vehicle reaches the j^{th} trapped person, where $T_j = \sum_{i \in N} y_{ij} (\tau_{ij} + T_i)$ and $T_0 = 0$.

Decision variables:

$x_i = 1$ if the person i is saved, 0 otherwise

$y_{ij} = 1$ if the person j is visited immediately after i , 0 otherwise

Objective function: Maximize $\sum_{i \in R} x_i$

Constraints:

$$\sum_{\substack{i \in N \\ i \neq j}} y_{ij} = 1, \quad \forall j \in N \quad (1)$$

$$\sum_{\substack{i \in N \\ i \neq j}} y_{ji} = 1, \quad \forall j \in N \quad (2)$$

$$\sum_{i \in R} y_{i0} = 1 \quad (3)$$

$$\sum_{\substack{i \in N \\ i \neq j}} y_{ij} = \sum_{\substack{i \in N \\ i \neq j}} y_{ji}, \quad \forall j \in R \quad (4)$$

$$\sum_{i \in N} y_{ij} (\tau_{ij} + T_i) \leq t_j + M(1 - x_j), \quad \forall j \in R \quad (5)$$

$$\sum_{i \in N} y_{ij} (\tau_{ij} + T_i) \geq t_j(1 - x_j), \quad \forall j \in R \quad (6)$$

$$x_j, y_{ij} \in \{0, 1\} \quad (7)$$

The first constraint ensures that each trapped person is reached precisely once, and the second constraint ensures that each trapped person's location is left once. Constraint (3) ensures that once the rescue vehicle leaves the base station, it returns to the base station only once. Constraint (4) ensures that the rescue vehicle leaves each trapped person after visiting them. The nonlinear constraints (5) and (6) together ensure that a person can be saved if and only if the rescue vehicle reaches a trapped person before their time-left value elapses. Constraint (7) is the well-known integrality constraint. The objective function maximizes the sum of survivals under the above 7 constraints.

AN UPPER BOUND ON EEM

As elaborated in section 2, large problem instances of EEM are NP-hard. Finding an optimal solution to EEM within polynomial time is unlikely. Therefore, in this section, an upper bound for EEM is developed. To develop the upper bound, EEM is viewed as a single machine flow shop with sequence-dependent setup times. Recall that the processing time of each job is zero. The setup time between two positions (two trapped persons or two nodes in the graph G) is equivalent to their distance. Due dates are equal to the time left values. Let the minimum setup time of the i^{th} node be M_i , which is equal to $\min_{j \neq i, j \in N} \tau_{(i,j)}$. Thus, M_i is the smallest distance between the i^{th} node and any other node in the graph G . Let C_j be the completion time of the j^{th} job. First, the following lemma is established.

Lemma 1: The minimum cost arc incident on each node in the graph G is a minimum spanning tree (MST) arc.

Proof: Let T^* be an MST on G and the minimum cost arc incident on node k be (k, l) , where $(k, l) \notin T^*$. Let the cost of arc (k, l) be $c_{(k,l)}$. Since T^* is a spanning tree on G , there exists a path P on T^* from k to l . From the path optimality conditions on T^* , for all arcs $(i, j) \in P$, the condition $c_{(i,j)} \leq c_{(k,l)}$ must be satisfied. But, since (k, l) is the minimum cost arc incident on the node k , and $(k, l) \notin T^*$, there exists an arc $(i, j) \in P$ such that $c_{(i,j)} < c_{(k,l)}$. Therefore T^* is not an MST, which contradicts our assumption that T^* is an MST ■

We now outline a procedure to attain an upper bound on the EEM. Let k be the upper bound on the total number of non-tardy jobs. Given below is a seven-step procedure to calculate k .

Procedure EEM-UB

- **Step 1:** Develop a graph G with $n + 1$ nodes and assign the arc costs with corresponding values of $\tau_{(i,j)}$ from the distance matrix.
- **Step 2:** Calculate the MST of the graph G and find M_i for $i = 1, 2, \dots, n$.
- **Step 3:** Sort M_i values in increasing order and make List 1 with n values. Obtain C_i for all i .
- **Step 4:** Sort t_i , $i = 1, 2, \dots, n$ values in increasing order and make List 2. Set $i = 1, j = 1, k = 0$,
- **Step 5:** If $C_j \leq t_i$, go to Step 7. Else, go to step 6.
- **Step 6:** If $i = n$ stop. Else, set $i = i + 1$ and go to Step 5.
- **Step 7:** $k = k + 1$. If $i < n$ and $j < n$, set $i = i + 1, j = j + 1$. Go to Step 5. Else stop.

Since the minimum setup time for each job is sorted in increasing order and assigned to the sorted list of due dates, the value of k obtained from the procedure mentioned above is an upper bound on the total number of non-tardy jobs. Given below is an example to illustrate the upper bound calculation. $t_1 = 5$

Example 2: Consider an EEM with 3 trapped persons with $t_1 = 5, t_2 = 9$, and $t_3 = 5$ with a distance matrix given in Table 2. The calculation of the upper bound is shown in Table 3. Figure 2 shows a graphical presentation of data in Table 2. As shown in Figure 2, the MST arcs are $(0, 1), (0, 3)$, and $(2, 3)$.

Table 2: Distance Matrix for Example 1

	0	1	2	3
0	0	4	9	5
1	4	0	6	8
2	9	6	0	4
3	5	8	4	0

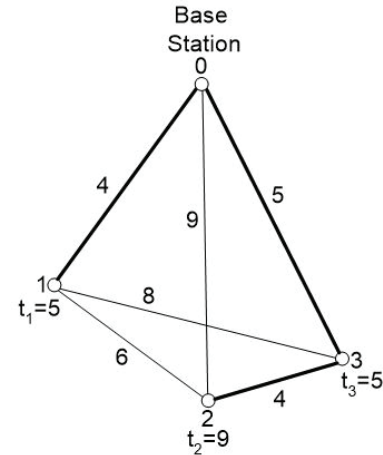


Figure 2: Graphical Presentation of Example 2

Table 3: The Upper Bound Calculation for Example 2

i	M_i	C_i	t_i
1	4	4	5
2	4	8	5
3	5	13	9

According to the procedure EEM-UB, Table 3 is developed. Since $C_1 \leq t_1$, the value of k becomes 1. Since $C_2 \leq t_2$, C_2 is next compared to t_3 . Since $C_2 > t_3$ the value of k , which is the upper bound becomes 2. The optimal path of example 2 is $0 \rightarrow 3 \rightarrow 2 \rightarrow 1$, which saves 2 trapped persons.

A MYOPIC HEURISTIC FOR EEM

A heuristic solution based on the nearest insertion procedure is obtained in this section. For any given EEM, the order of visits does not depend on the time

left values but on distance values. The nearest trapped person to the base station is visited first. The second trapped person visited is the nearest trapped person to the first trapped person visited, and so on. The J^{th} trapped person visited is the nearest trapped person to the $(j-1)^{\text{th}}$ trapped person visited. This procedure is continued until all trapped persons are visited. When a trapped person is visited, the completion time is compared to the time left values to determine whether he can be saved or not. For the data given in Example 2, the heuristic selects the path $0 \rightarrow 1 \rightarrow 2 \rightarrow 3$ saving only the 1st trapped person. This heuristic is appealing as it is easy to apply in the field. It also does not require extensive computational procedures, and the operator can make the decisions of the emergency vehicle.

GENETIC ALGORITHM FOR EEM

We now develop a genetic algorithm to solve the EEM within a reasonable computational time. The proposed heuristic is based on a genetic algorithm first proposed by Holland [1975]. In this application, a chromosome represents a permutation of trapped persons corresponding to an order of visits by the rescue vehicle. Thus, the number of genes in each chromosome equals the number of trapped persons in the given problem. For each chromosome, a fitness value is assigned. The fitness value of a chromosome is equal to the number of trapped persons saved by the rescue vehicle. The higher the fitness value, the better the performance of the algorithm.

The initial population consists of randomly generated sequences of trapped persons. Each chromosome in the initial population is evaluated for fitness. The best route of the initial population (i.e., the route with the highest fitness) is recorded.

The genetic algorithm progresses to the next generation through crossover and mutation operations. A mating pool is first created using the roulette wheel selection to ensure most good parents' copies are selected for mating. The size of the mating pool is half of the population size. Then, a couple is chosen randomly from the mating pool, and a two-point crossover (Figure 3) is executed, yielding two children. Thus, a parent can be selected multiple times and coupled with many others at different times to make children with varying fitness values. Every time a couple from the parent population mate, two children are born. Some of the children are sent to the child population, while others are mutated before adding to the next generation. The mutation

operator used in this paper is a pair-wise exchange of two randomly selected genes (Figure 4). Hence, mutation first involves generating a random number for each child to determine if a mutation is applied. If the random number falls within a predetermined range, the child is mutated; otherwise, the child is sent to the child population unchanged. Since genes in a chromosome are a permutation of customers, a swap between two genes always produces a feasible solution by properly representing a sequence. Thus, a high mutation probability (40%) adds diversity to the population.

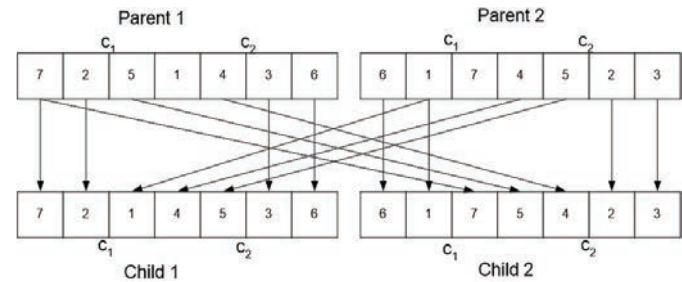


Figure 3: Two-point Crossover Operator

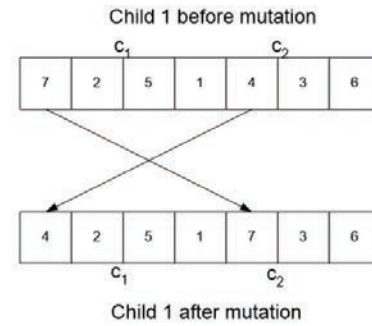


Figure 4: Pair-wise Exchange Mutation Operator

At this point, the population of children is the same size as the total population. Still, we wish to have the population in the next generation contain chromosomes from both the child population and the parent population. To accomplish this, 95% of the next generation consists of the highest performing chromosomes from the child population, while 5% are the highest performing parents that are carried forward without any changes.

The genetic algorithm is run for a predetermined number of generations depending on the problem size. For each generation, the population size is kept constant at a predetermined value, depending on the problem size. In each generation, the best sequence is recorded. Since our construct always carries forward the best parent, this best solution is the best sequence in the last generation.

COMPUTATIONAL RESULTS

To test the algorithm's fitness, a detailed computational study is performed. A set of random problems, each

Table 4: Results of 9 Randomly Generated EEM Problems

Problem Parameters			Algorithm Performance (Number of people saved)			Improvement in Performance between GA and Myopic Method	GA Parameters				
Problem Size	Max Direct Distance from the Base Station	Max Time Left Value	Upper Bound	Myopic Heuristic	GA Result/ Best of 10 Random Starts	$100*(UB-GA)/GA$	Range of 10 GA Runs	Mean of 10 GA Runs	Population Size	# of Generations	CPU Time in Seconds
4	20	40	3	3	3	0%	3-3	3	10	100	< 1
6	30	60	3	2	2	33%	2-2	2	20	500	< 1
8	40	100	5	3	4	20%	4-4	4	40	500	< 1
10	40	190	9	3	6	33%	6-6	6	60	1000	< 1
12	40	210	12	8	9	25%	9-9	9	60	1000	1.01
14	40	210	12	6	8	33%	7-8	7.7	100	3000	5.53
16	40	220	15	6	9	40%	9-9	9	100	3000	6.9
18	80	300	14	6	9	36%	8-9	8.7	100	3000	15.07
20	80	300	16	9	11	31%	10-11	10.3	100	10000	34.3

with a different number of trapped persons, is generated first. The location of each customer is decided such that the direct distance from the base station does not exceed an arbitrarily selected maximum value. The values mentioned above are chosen for large problems, favoring a widely scattered set of locations in the 2-D plane. The time left values of each trapped person are randomly generated such that each of them can be saved if the rescue vehicle directly reaches him from the base station. However, a maximum for the time left value is given for each problem. For large problems, the time left value is selected to be larger such that a reasonable number of trapped persons can be saved.

The genetic algorithm performance is evaluated by calculating the gap defined by (upper bound-GA result) upper bound. The genetic algorithm is initialized 10 times for each problem, and the best solution is recorded for comparison. In addition, the range and the average of all 10 runs are given.

As seen in Table 4, a myopic method and GA perform equally well for small problem sizes. However, as the problem size increases, GA outperforms the myopic algorithms. For example, in a problem size of 8, GA saves 20 percent more people than the myopic method. The effectiveness of GA over the myopic method is 40% higher for a problem with 16 trapped people.

CONCLUSIONS AND FUTURE RESEARCH

With the increasing frequency of natural and man-made hazards, EEM has many applications and uses. In this paper, the emergency evacuation problem is addressed

using a genetic algorithm method. We developed a basic model with insights that could help develop further extensions.

We model the EEM problem as a single-machine scheduling problem. The problem is shown to be NP-hard, indicating that it may not be feasible to find optimal solutions. We propose a myopic heuristic as well as GA based solution method. The myopic method may be suitable in applications with few service locations and fast solutions. In larger applications, GA outperforms the myopic method. GA-based solution methods are shown to save 40% more trapped people.

Several possible extensions may help the applicability of the research. The most immediate extension of the current work is to consider EEM with a maximum route length constraint for the rescue vehicle. For example, this type of constraint can arise due to the fuel requirements of the rescue vehicle. It is more realistic to assume that the rescue vehicle has to return to the base station after traveling a specific mileage or after being in the field for a given amount of time.

The capacitated version of the EEM is also an interesting extension. To make the capacitated emergency evacuation model (CEEM) more realistic, it is assumed that once the capacity of the rescue vehicle is full, it must return to the base station for unloading. The CEEM can be analyzed to maximize the number of survivors. One obvious application of CEEM is the evacuation of fishing crews trapped in their boats in hurricane situations.

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Impact of “Work-Home Interface” on “Job Satisfaction” *A Structural Equation Modelling*

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ABSTRACT

This research paper aims to assess the impact of the work-home interface on job satisfaction. The methodology used to analyse the data is PLS-structural equation modelling. Scales to measures constructs were taken from standardised scales. Reliability and validity of scales are established and results are presented in paper. Data was collected from 201 respondents working in the service industry. Convenience sampling was used to collect data. Results of the study show a low impact of “work-home interface” on job satisfaction. T value is >1.96 , and the R square value shows the significant but low impact of “Work-home interface” on “Job Satisfaction”.

Keywords: “Job Satisfaction”, “Work-home Interface”, SEM

INTRODUCTION

Today, the reality of the job is that all employees are struggling to balance work and personal life. The interface between work-home interface and job satisfaction is mediated by stress perceived by the employee due to the interface of work in home responsibilities (Lourel et al., 2009). One can separate the domain of work and home separately and is the reason for job dissatisfaction among employees (Demerouti et al., 2005). The flexible working hours or work in a shift can create a conflict between work and home and impact the health and job satisfaction of employees (Demerouti et al., 2004). When there is high demand for work and resources are insufficient to tackle that demand, it can lead to a spillover effect on work on the home. If not controlled timely, it can lead to exhaustion (Mostert et al., 2011). Time and work pressure are given to one role, impact the requirements of another role, and affect the strain and behaviour of employees (Greenhaus & Beutell, 1985). There is a more substantial impact of the work-home interface on women than men, which is the cause of depression and affect behaviour and attitude towards job satisfaction (Kossek & Ozeki, 1998). Men’s participation in family affairs and changing attitudes towards home responsibilities have

convinced the organisation to make policies for men and provide a supportive work environment for males and females (Alexandra Beauregard, 2006). Many studies’ meta-analysis shows that work interface with family is more strongly related to family interface with work with job satisfaction (Shockley & Singla, 2011). Work-home interfaces impact job satisfaction adversely, but psychological contracts help reduce the adverse impact of the work-home interface on job satisfaction as a mediator variable (Van Der Heijden et al., 2009). The negative effect of the work-home interface can affect job loyalty and complete participation in organisation activities due to job dissatisfaction (Aqeel Ahmed Soomro & Breiteneker, 2017). Career pressures at work have an impact on family responsibilities as the number of dual-career employees rises. Change in workforce diversity creates stress due to work demands and not fulfilling responsibilities (Elloy & Smith, 2004). The following hypotheses are made to check the impact of the work-home interface on job satisfaction.

H0: “Work-home interface does not impact job satisfaction of employees working in service industry”

H1: “Work-home interface impact job satisfaction of employees working in service industry”

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RESEARCH METHODOLOGY

A customised questionnaire was used to collect data. Data was gathered from 201 Delhi-based service executives. Questionnaires were presented to the participants. All of the respondents completed the survey. As a result, all of the forms were accepted. Data were gathered on five points Likert scale where five stands for strongly agree and one stands for strongly disagree. Scale for “Job Satisfaction” was adapted from standardised scale (Lait & Wallace, 2002), and the “work-home interface” scale is adapted from a standardised scale of Fisher et al. (2009).

Table 1: Scale for Job Satisfaction and the Work-home Interface

Variables	Measurement Items
“Job Satisfaction”	JS1 I was feeling depressed about my job
	JS2 During work, I felt like I’m losing control
	JS3 My workload has overburdened me
	JS3 My workload has overburdened me
	JS4 I was considering quitting my work
	JS5 I was stuck in my job and couldn’t seem to get out
	JS6 I was dissatisfied with my job
“Work-home interface”	WHI1 Work had taken a toll on my personal life
	WHI2 It’s difficult to manage personal time
	WHI3 I ignore my personal responsibilities due to work
	WHI4 I don’t enjoy due to my work
	WHI5 I gave my work priority over my home
	WHI6 work-home interface I was feeling difficulty in managing work and family
	WHI7 I kept my job first over family
	WHI8 I was exhausted due to work from home
	WHI9 My work was affected due to my requirement at home

Sample Size

As stated in Table 2, the value of KMO is 0.851, which is higher than the allowable limit (Crane et al., 1991). This demonstrates that the sample size is sufficient for factor analysis.

Table 2: KMO and Bartlett’s Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.851
Bartlett’s Test of Sphericity	Approx. Chi-Square	1574.127
	df	105
	Sig.	0.000

Normality Assumption

The sample size is less than 300; therefore, the Kolmogorov test and Shapiro-Wilk test are adequate to check the assumption of normality before applying a parametric test. The significant value is less than 0.05 (Kumari & Kumar Maiti, 2019); therefore, the premise of normality is violated, we can use PLS-SEM for factor analysis.

Table 3: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Job Satisfaction	0.177	201	0.000	0.888	201	0.000
Work-Home Interface	0.205	201	0.000	0.889	201	0.000
a. Lilliefors Significance Correction						

DATA ANALYSIS AND INTERPRETATION

Raw data is of no use without analysis and interpretation. This section is divided into two parts (1) Descriptive Analysis and (2) Hypothesis testing.

Descriptive Analysis

Table 4 shows that total males and females are 101 and 100 in the sample size of 201. Maximum respondents are from the education sector, followed by Financial and other Sectors.

Table 4

	Gender		Total
	Male	Female	
Health	7	4	11
IT	6	4	10
Financial	27	10	37
Defence	4	4	8
Education	45	67	112
Other	12	11	23
Total	101	100	201

Table 5

Gender * Age Crosstabulation						
Count						
		Age				Total
		18-30	31-40	41-50	More than 50	
Gender	Male	6	44	41	10	101
	Female	9	52	33	6	100
Total		15	96	74	16	201

Table 5 shows the data according to age. Total respondents in the sample are from different age groups. Ninety-six respondents are from age group 31-40, followed by 74 from 41-50 age group, 16 respondents are more than 50 and 15 respondents are between 18-30.

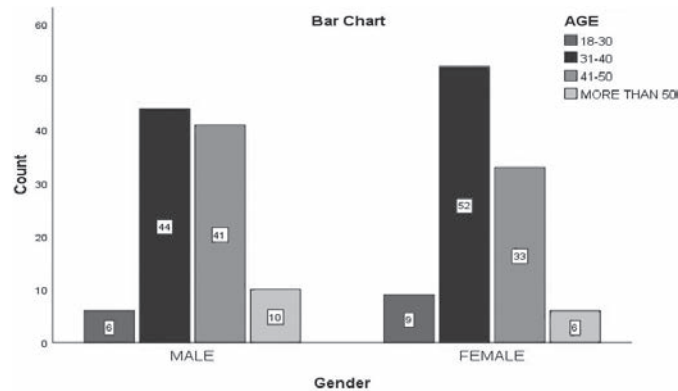


Figure 1

Reliability and Validity of Scale

Constructs are created through existing literature; therefore, confirmatory factor analysis is done before checking the impact of “Work-home interface” on “job satisfaction”. Statistical results are presented in Table 6.

Table 6: Statistical Results

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Job Satisfaction	0.855	0.891	0.579
Work-Home Interface	0.886	0.907	0.523

Internal consistency of data is checked through Cronbach alpha which is above the standard limit of 0.70; therefore, data is reliable. Convergent liability is checked through composite reliability and average variance extracted, above 0.7 and 0.5 (Ab Hamid et al., 2017).

Discriminant Validity (HTMT Criterion)

HTMT criterion is used to check how much a construct is different from another construct. A value near 1 indicates a lack of discriminant value. The value presented in table 7 is 0.443, which is less than the permissible limit of 0.85 (Ab Hamid et al., 2017); therefore, discriminant validity is established.

Table 7

	Job Satisfaction	Work-Home Interface
Job Satisfaction		
Work-Home Interface	0.443	

Hypothesis Testing and Significance

H0: “Work-home interface does not impact job satisfaction”

H1: “Work-home interface impact job satisfaction”

Table 8

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	R Square	F Value
Work-Home Interface → Job Satisfaction	-0.413	-0.433	0.064	6.445	0	0.17	0.205

Table 8 shows that the T statistic is more than 1.96 and the R square value is 0.17, indicating that the work-home link is accountable for 17% of the variation in job satisfaction. According to this, the work-home interface has a negligible effect on job satisfaction. The total impact of work-home interface on job satisfaction is 41%.



Figure 2

CONCLUSION

The study was conducted to check the impact of the work-home interface on the job satisfaction of employees working in the service industry. The study results show that an increase in work-home interface reduces job satisfaction of service sector employees. There is an impact of the work-home interface on job satisfaction, but the work-home interface does not significantly impact the dependent variable job satisfaction; some other factors can affect job satisfaction. The results are significant, as the T value is greater than 1.96. Researchers can find the impact of the work-home interface on job satisfaction, taking some mediator or moderator in the study. Research is limited to a small sample size, and it can be done with a large sample size, and data can be collected from the larger population.

This study helps understand the role of one construct on job satisfaction, but more variables need to be studied for universal application of study.

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Teachers' Well-Being and Attitudes in Relation to Precarious Employment in the Higher Education Sector

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ABSTRACT

One of the most significant sectors of the economy is education. The quality of education that students receive from their professors has a direct impact on their future success. As a result, ensuring educational quality, which is directly linked to instructors' efforts, is crucial. Only motivated and content teachers should be expected to perform their best. Teachers' dissatisfaction with their jobs, on the other hand, is claimed to be the reason of their poor performance. Teachers are recruited on a temporary and permanent basis; therefore it's important to understand how their profession influences their well-being and attitude toward their work. Despite a substantial body of empirical research studying the impact of job vulnerability on employee mental health, the argument continues, and knowing the true nature of such a link has crucial policy consequences. The rising rates of insecure work that have been recorded around the world in recent decades have been brought into sharp emphasis. This study looks at the impact of precarious work on teachers' well-being and teaching attitudes, since every educational system strives to foster youthful talent, produce healthy instructors and pupils, and promote social welfare for all members of society. It is an empirical study done among teachers working in higher education institutions in the National Capital Region on various temporary positions. Data was collected from a total of 82 temporary teachers working on temporary roles with the help of a structured questionnaire. Precarious job has a considerable detrimental impact on teachers' well-being in terms of anxiety, ill-health, despair, and psychological discomfort, according to the findings of the study. Teachers' attitudes have been influenced as well, with less time and effort spent on lecture preparation, causation at work, and a reduced dedication to research.

Keywords: Precarious Employment, Well-Being, Teaching Attitude, Job Satisfaction, Psychological Distress

INTRODUCTION

Employees are an organization's most precious asset. The success of any organisation is driven on the performance of its employees. Employees that are satisfied in their occupations are more likely to provide their best effort at work. As a result, it's vital to know which factors inspire people to work hard. Companies have been reorganising their organisations through economising and temporary employment, suggesting the influence of job insecurity on employee performance. Job security, which is frequently measured as the likelihood of not losing a job in the near future, is a major factor in job satisfaction. Job security is commonly recognised as an important and valued feature of a worker. According to "Jandaghi et al., 2011," job satisfaction depends on one's employment status. Permanent employees, who have job stability, are likely to be happier than temporary employees.

One of the most significant sectors of the economy is education. The quality of instruction provided by educators has a significant impact on the future prospects of students. Only a highly motivated and pleased educator will give their all in terms of teaching quality. Extrinsic and intrinsic elements are thought to influence employee job satisfaction and motivation. According to Herzberg's Hygiene–Motivation Theory, job stability is one of the most essential elements. Teachers are hired on a temporary and permanent basis in both schools and higher education institutes. Temporary teachers are hired on an as-needed basis, with different working and payment schedules. It indicates that the stress of job insecurity affects even the most educated individuals of society. They are the ones who will shape the country's youth's future.

Despite the fact that they are extremely valuable assets, they are undervalued. As a result, it's vital

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to comprehend how unstable employment affects educators' teaching attitudes. It is vital to guarantee that teachers provide high-quality education, which can only be accomplished if they are content and dedicated to their jobs. Temporary employment is more common in the teaching profession these days. The majority of positions, such as contractual staff, guest faculty, resource individuals, ad-hoc positions, and so on, are filled on a temporary basis. We must examine how job security/insecurity affects teachers' teaching attitudes and well-being because education is such a vital field.

Every employee desires job security and safety, and this has long been acknowledged as one of the most important elements influencing employee happiness, dedication, and performance. Perceived work instability is linked to negative outcomes, such as lower job satisfaction, commitment, and well-being, as well as increased turnover intentions. According to a study by "Cheng and Chen, 2008" Loss of work stability causes a slew of other concerns, including low motivation, melancholy, and other medical diseases. This paper is an endeavour to examine the impact of temporary employment status on teachers' well-being and attitudes about teaching.

Given its complex nature, which varies among nations and the economic and social structure of the labour market, there is still no globally agreed-upon definition of precarious work. Precarious employment, on the other hand, can be defined as job relationships marked by significant uncertainty, poor pay, and diminished social benefits (Benach et al., 2014)). This was frequently part of a downward spiral of poor teaching and training, as well as significant numbers of teachers "bailing out" of the profession. Wherever there is a teacher shortage, teaching has grown less appealing since it has become less "professional." Precarious work was most common among workers in higher education despite being found in all education sectors. These developments are part of a larger "de-professionalization" problem.

This research adds to the growing list of threats to the teaching profession, teachers' prestige, and education as a public benefit. Private interests and slick marketing must not overshadow these issues. Instead, they must become the focal point of a genuine, high-quality global discussion on the future of education. Teachers choose to enter the profession for a variety of reasons, but they all have a desire for recognition, autonomy, and affiliation throughout their careers which is seen to be diminishing these days. According to (Benach et

al. 2014), 'precarious employment is now considered a social determinant of health and an employment condition affecting the health of workers, families and communities'. (Benavides et.al, 2000) in their research found that precarious employment, in the form of fixed term, temporary contract, is positively correlated with job dissatisfaction. It infers that precarious employment is one of the factors leading to job dissatisfaction among employees working on temporary positions.

According to MacBeath (2012), teachers emphasise the need of acknowledgment and respect in job. These shared criteria, which are important for all instructors, shape the standing of the teaching profession and play a critical role in guaranteeing educational quality and equity. Students appear to learn more effectively in countries where teaching is highly regarded in society (Burns and Hammond, 2014). Furthermore, teachers' positive perceptions of their status are linked to other features of high-quality education, such as on-going professional development, participation in research, collaboration and interchange with colleagues, and participation in decision-making (Hargreaves and Flutter, 2013).

These jobs range widely — from receiving daily calls in the morning as an occasional (supply) teacher, to part-time contracts ranging from a few weeks or months at a time. However, teachers are not the only group of education workers feeling the pinch today. Precarious forms of employment have become increasingly normalized across the education sector. In the Higher Education (HE) sector, the number of insecure academic jobs, especially zero-hour contracts for hourly paid teaching and short-term contract research, has grown exponentially in recent years in response to the structural and fiscal changes within universities, which reflect these global shifts.

The need to understand employees' attitudes and behaviour toward the business has led to a slew of studies on the link between precarity and work stress (Bhandari & Hesmati 2006). Every educational system strives to nurture youthful talent, produce healthy teachers and students, and promote social welfare for all members of society. The sort of Psychological Contract that employees form with their company has an impact on how they perceive many aspects of their workplace. Workplace stress and the principle of social comparison and exchange are two of these variables.

The evidence from the studies, on the other hand, primarily indicates to a higher chance of psychological ill health when job uncertainty is at its highest (Artazcoz et al. 2009). In Australia, increased work uncertainty was linked to low self-rated health, sadness, and anxiety (D'Souza et al, 2003). Virtanen et al. (2005) discovered that steady employment was linked to lower psychological discomfort and that jobs with less stability were linked to poorer overall health. Thorley and Cook (2017) examined the impact of temporary, zero-hour, and self-employed labour on millennials' mental health. According to the survey, "those in temporary positions are 29 percent more likely than those in permanent jobs to develop mental health difficulties". It was also shown that "people on zero-hours contracts are 13 percentage points more likely to develop mental health difficulties than those in other forms of work".

LITERATURE REVIEW

Literature review is presented as two distinct areas which include relationship of precarious employment with respect to well-being and teaching attitude among teachers. In his research (Michael Mindzak, 2019), found that behind the usual full-time, permanent model of the classroom teacher, there is an immense labour force of educators and education professionals who mostly operate on the periphery as precarious workers. Precarious labour has a personal, social, and psychological impact on individuals, families, and communities, in addition to an economic one. This extended precariousness will mostly serve to drive talented educators out of the system, putting students' futures at risk. Precarious work can have a range of effects on teachers, including unpredictability, multiple jobs, continual job searching, wage instability, and unpaid labour needs. These positions range from part-time contracts lasting a few weeks or months to receiving daily calls as an occasional (supply) teacher in the morning.

In their study (Rajput & Talan, 2017) looked at the antecedents and health implications of precarious employment among teachers and discovered that job insecurity has a negative impact on employees' mental and physical health. Stress and anxiety were found to have a particularly strong mental influence. Cohen (2018) discovered that insecure employment has a substantial impact on mental health and stress levels in their study on the repercussions of temporary employment. It demonstrates a link between precarious

work and teachers' mental health in terms of depression, anxiety, and psychological discomfort. "Temporary workers—those without long-term, permanent employment—appear to be more sensitive to mental health difficulties," the expert stated in an article published in "The Economic Times". "Studies suggest that temporary work puts a strain on employees' mental health, with contingent workers reporting more symptoms of sadness and psychological distress than similarly employed people who aren't in these fixed-term jobs."

Bashir & Gani (2021) highlight the perception of professors with reference to many areas of employment in their study named "Empirical investigation of Job Satisfaction among Academics." Salary and job security were shown to be the most important factors. It implies that job stability is one of the most desired work characteristics, and that it has a direct link to job satisfaction. Higher feelings of job insecurity were found to be associated with poorer mental and physical health (Hellgren & Sverke, 2003). It depicts the repercussions of job instability among people who work on a temporary contract. It implies that the fear of losing a job causes stress, which leads to physical and mental sickness. The question here is how employees who aren't sure if their position will be kept are expected to stay devoted to it. If they aren't motivated, how can they expect to perform at their best? A fundamental worry is the need of having a contented, engaged, and devoted workforce.

Sverke et al. (2003) found a negative relationship between job insecurity with well-being of employees, their attitudes, job involvement and trust over management. It shows that perceived insecurity in job leads to loss of innovation and creativity. Probably Temporary teachers lack Organizational Citizenship behaviour due to dissatisfaction in job as a result of insecurity in job. Also it results in demotivation among employees in temporary positions resulting in reduced efforts. Even, stress on account of insecurity in job badly affects the physical and mental health of employees. Heaney et al. (1994) support the findings of above literature. They affirmed that job insecurity can be considered as job stressors, and leads to meaningful changes over time in terms of both job satisfaction and physical ailments. According to the results, prolonged periods of job insecurity lead to dissatisfaction in job and physical illness among temporary employees.

Campbell et al. (2007) investigated the consequences job insecurity for the organizations in terms of increasing employee rate of absenteeism and withdrawal behavior. He found that fear of losing job leads to higher absenteeism, task avoidance and turnover. Abramis (1994) in his research examined job insecurity as a stressor for employees. He examined the possible effects of job stress on job performance. He found that, decreased performance in job, and an intention to leave the job are assumed to be a consequence of job insecurity. According to Lazarus and Folkman (1984), like any other stressor, job insecurity is linked to reduce wellbeing and leads to negative sentiments. Results of their investigation found that job stress on account of perceived insecurity in job has negative impact on the employee's attitude and behaviour in the workplace.

"Precarious work is related with a range of health problems including both mental and physical disorders, occupation-specific ailments, dangerous life-style behaviours, and social disadvantage," according to (Bodin T. et al., 2019). It deduces how damaging an employee's employment situation might be for both the employees and the organisation. This could lead to a lack of workplace dedication and dissatisfaction, which could lead to inefficient work behaviour as a result of ill health. In their study (E. Moscone et al., 2016) discovered that workers on temporary contracts are more likely to be prescribed psychotropic drugs. More days worked on a temporary contract, as well as frequent contract changes, increase the chance of developing mental health problems that require medical attention. This demonstrates that precarious employment can put people in temporary occupations at risk of psychological suffering. Job insecurity caused by the unstable nature of their work has a direct or indirect impact on their personal and professional lives.

OBJECTIVES OF THE STUDY

1. To study the impact of precarious employment on well-being of teachers.
2. To study the impact of precarious employment on attitude of teachers towards teaching.

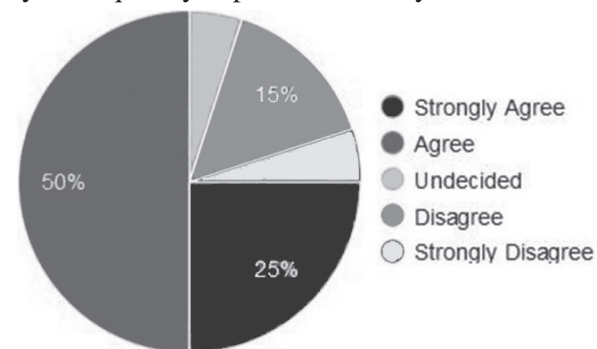
RESEARCH METHODOLOGY

This study is an empirical study based on the findings of research conducted among teachers working on different temporary positions in higher education institutes in the National Capital Region. This study is based on both primary data and secondary data. Secondary data was

collected from various sources like journals, research papers, magazines, newspapers and books. Primary data was collected from a total of 82 teachers working on different temporary positions, i.e. Guest faculty, Teaching Resource Persons, Ad-Hoc, etc., in the higher education institutions in the National Capital Region. Use of Percentage analysis has been done to analyse the role of precariousness on the well-being and teaching attitude among one of the highly educated class of the society working in the higher education institutions. A total of 8 statements relating to the relationship between temporary employment and well-being, teaching attitude of teachers were used to draw inferences.

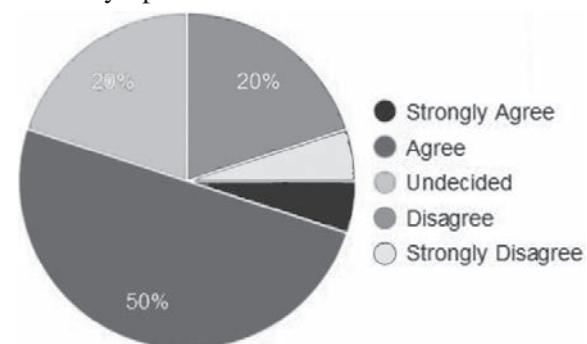
ANALYSIS

1. Because of the transient nature of the employment, you frequently experience anxiety at work



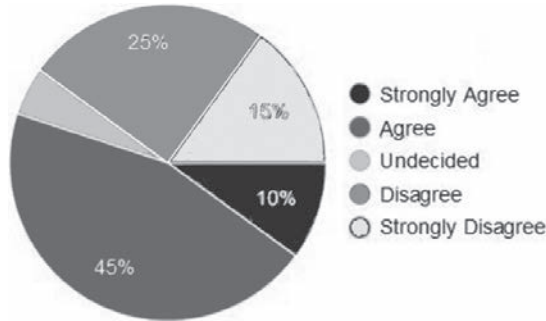
Inference: 75 percent of respondents agree that they experience anxiety at work as a result of the temporary employment, indicating a negative association between precarious nature of job and stress at work.

2. Since you started this employment, your family, friends, and co-workers have all complained of low mood symptoms.



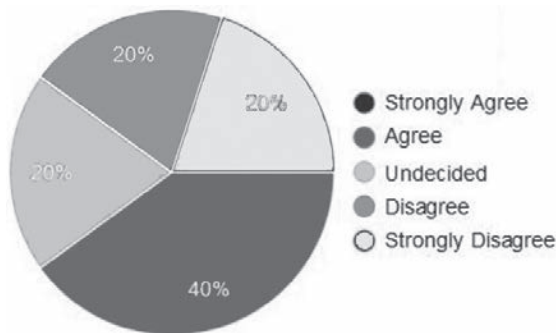
Inference: 55 percent of respondents indicate that they have started to suffer depressive mood symptoms. The inference indicates that teachers have begun to exhibit psychological discomfort as a result of the stress of job instability.

3. Because of the nature of your job, you often have a lot of negative thoughts in your mind.



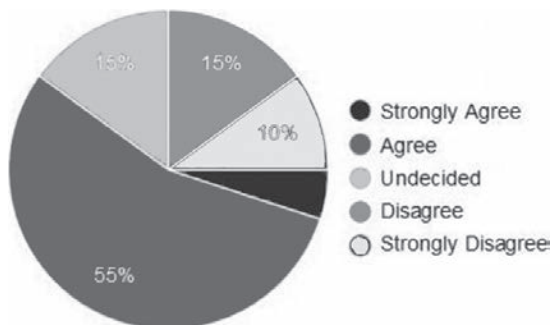
Inference: 55 percent of respondents say that they have a lot of negative ideas in their thoughts, which is symptomatic of melancholy mood symptoms and poor mental health.

4. You've begun to approach your work duties with a careless attitude, knowing that your efforts are rarely recognized.



Inference: The reaction to the preceding statement has been ambivalent. It implies that, despite their temporary employment, they do not have a casual attitude about work. Despite the fact that their efforts are rarely recognised, they work persistently on their tasks.

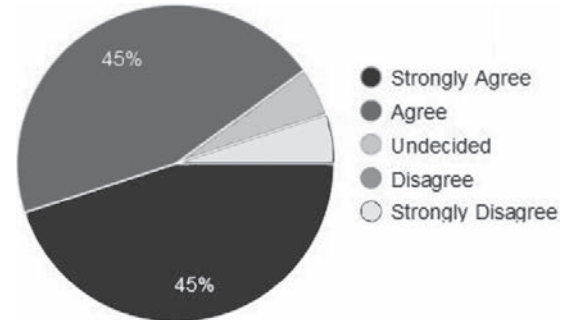
5. You believe your job performance has been harmed as a result of the nature of the job you were employed for.



Inference: According to 65 percent of respondents, their job performance has been impacted entirely due to the temporary nature of their employment. It was discovered

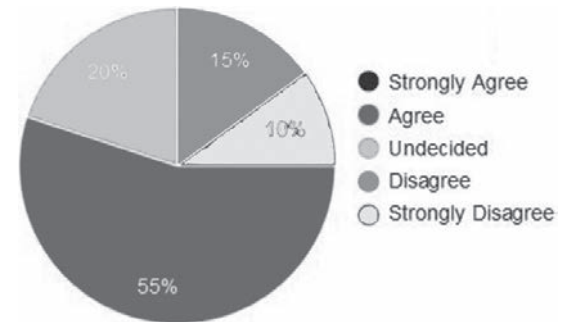
that temporary employment has a considerable negative impact on teachers' performance.

6. You would have worked harder, if you had been provided a sense of job stability.



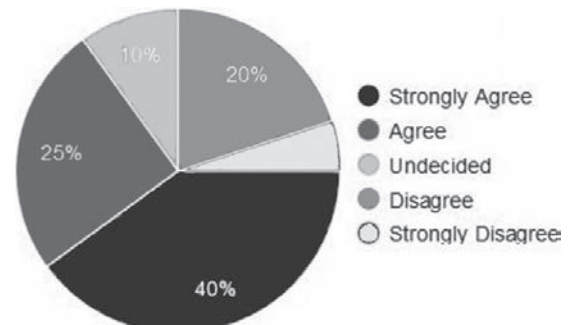
Inference: 90 percent of respondents agrees that given a sense of employment stability, they would have put in more efforts in job. This shows the negative impact of precariousness in job on their teaching attitude.

7. Due to your precarious employment, your lecture preparation efforts have slowed down in terms of timing and effort.



Inference: 55% of respondents agree that their dedication to their job has weakened. It demonstrates that precarious work has a detrimental relationship with instructors' teaching efforts in terms of time and dedication.

8. Due to the stress of job insecurity, you demonstrate a lack of devotion to research.



Inference: 65 percent of respondents believe that they don't devote enough time to research because of stress

of employment insecurity. This indicates that transitory employment is linked to a lower interest in research.

Model showing Relationship between Precarious employment and Well-Being, Teaching Attitude of Teachers



The relationship between insecure employment and well-being, as well as teacher attitudes, is depicted in the above model. Teachers endure anxiety, poor mental and physical health, and psychological anguish as a result of their precarious work, according to research. Teachers agreed that their dedication to research has dropped substantially, as have their lecture preparation efforts, according to the findings. They believe their performance would have been substantially better if they had been given a sense of job stability.

FINDINGS AND SUGGESTIONS

This is a descriptive research that aims to find out how temporary job affects instructors' well-being and teaching attitudes. Precarious work has a negative impact on teachers' mental health, according to majority of research studies. Precarious employment leads to job dissatisfaction, which has a major impact on their performance in terms of lecture preparation efforts, research dedication, and educational quality. Depressive symptoms, worry at work, and psychological agony have all been recorded in teachers, all of which are affecting their personal and professional lives, either directly or indirectly. Educators are hired for a range of temporary jobs that pay differently and do not guarantee a monthly minimum wage.

This is the level of tyranny experienced by society's one of the highest educated class. Employees are at jeopardy

of losing confidence, sadness, anxiety, and other psychological difficulties as a result of this, all of which contribute to inefficiency at work. According to studies, job discontent as a result of precarious employment leads to inefficiencies in the workplace, such as reduced lecture preparation times, demotivation, decreased research dedication, and unprofessional behaviour.

The study's findings show that precarious work is not a viable alternative to the problem of a shortage of sanctioned teaching positions. Teachers should be hired rigorously according to the University Grants Commission's guidelines, which at the very least provide them with a fair wage. A teacher who does not know if he or she will be employed the next day is unlikely to have a feeling of job commitment. This, in turn, leads to job discontent, which leads to inefficiency in the classroom. As a result, the entire objective of education is defeated. Teachers are the architects of today's youth's future. Despite being among the most educated members of society, they are cast as victims. It is unreasonable to expect a teacher in such a situation to provide high-quality teaching.

CONCLUSION

The employment status of temporary teachers is not well established throughout higher education institutions. Hourly paid lecturer, teaching assistant, teaching fellow, associate lecturer, visiting lecturer, and teaching resource person are just a few of the official employment names in use. Because of this diversity, there is a lack of clarity concerning rights and terms of employment, which leads to a sense of fear among this highly educated group. Because there was little qualitative difference between the experiences of lecturers on hourly paid and zero-hour contracts, we don't establish a terminological or categorical distinction between them and refer to them all as hourly paid personnel or academics.

One key message for policymakers from the study's findings is that interventions aimed at increasing labour market flexibility through the use of more temporary contracts should also consider the social and economic costs of these reforms in terms of employee psychological well-being and educational quality. Education is a necessary component of the economy. At any cost, it is unaffordable to be sacrificed. It is therefore critical to investigate this issue in order to improve the quality of education provided to children.

There is a need to address job dissatisfaction and job stress through suitable assessment, such as a rating

system and a teachers' satisfaction index evaluation based on the duties and work pressure assigned to each instructor. This reach offers value to information by allowing universities, institutions, and colleges to understand the reasons for instructors' concerns about job security and workload. On the other hand, it is critical for the administration of these institutes to gain a deeper understanding of its instructors' requirements and desires, as well as the aspects that will contribute to their contentment.

It may be argued that teachers who enjoy their work are more likely to stay with the organization. A lecturer who believes their position is secure can be said to be in the same canoe. As a result, job security and job satisfaction are two factors that influence teachers' job attitudes and organisational commitment. Instructors are placed in a terrible situation that has an effect on not only their well-being and health, but also their family decisions and relationships. Our study looked at some of the factors that may contribute to job insecurity for such educators, as well as the effects of job insecurity on their mental and physical health.

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Analysing the Pattern Using Association Rule for Machine Learning Application

Praveen Gujjar J.¹ and Prasanna Kumar HR²

ABSTRACT

Marketing promotion plays a pivotal role in moving the product effectively. The term promotion is used in almost all sector including health, agriculture, education, transportation, etc., Multidisciplinary science may help the decision makers to take educated decision. This paper focuses on generation of association rule using Apriori algorithm. This generated rule can be used for the market analysis, product recommendation and demand forecasting. Association rule has been generated with the help of support and confidence in WEKA 3.8.5. To generate the association rule with the minimum support and confidence has been applied to superstore dataset. The first rule implies with 92 percent confidence that if biscuits is true, frozen food is true, fruit is true and total is high in 788 instances, then it is true for bread and cake in 701 instances. This paper describes execution of popular data mining algorithm named Apriori using WEKA 3.8.5 tool for superstore dataset in arff file format. For future research direction, researchers can employ the GPU to process the deep learning application using Google colab.

Keywords: Apriori Algorithms, Arff File Format, Association Rule, Market Basket Analysis, WEKA 3.8.5

INTRODUCTION

Data mining helps in extraction of potential useful information from the dataset. It also helps in identifying the pattern or implicit information from the dataset. Association rule in data mining tries to find out the associations, correlations, frequent patterns or causal structures from the available dataset. Dataset are available in the databases such as transactional databases, relation databases or in repositories. Association rules are generated by careful analysis of the data having the frequent patterns, minimum support and confidence. Association rule can be generated using various tools and programming languages such as R programming language, Python Programming, WEKA etc., to generates the association rule there are many algorithms which have been developed such as frequent pattern growth, context-based association rule etc. Apriori algorithm is one among the popular association rules from the transactional database.^[1] In data mining image analysis and pattern recognition using unsupervised machine learning such as clustering technique can be used.^[2] The University of Waikato in New Zealand developed WEKA tool in JAVA language

that implements data mining algorithms. WEKA is abbreviated for Waikato Environment for Knowledge Analysis. WEKA is open source software which is freely available on internet. It has the huge storage of machine learning algorithms for data mining problems. We can easily apply these algorithms on desired dataset. WEKA implements algorithms for data pre-processing, classification, regression, clustering and association rules. In WEKA, Explorer is used for exploring and extracting the dataset on which the operations has to be performed. Experimenter is used to perform experiments or statistical tests on the dataset. Knowledge Flow provides same functionalities as provided by Explorer but with a drag-and-drop interface. It helps in incremental learning. Simple CLI provides simple Command Line Interface that allows direct execution of WEKA commands for operating systems that do not provide their own command line interface.^[3] Many deep learning and machine learning applications rely on heavy computations on massive datasets. GPU is an acronym for graphical processing units which may help in parallel task processing.^[3] Association rule can also be implementable in python using Google Colab.

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Most of the applications in deep learning and machine learning use NVIDIA GPUs.^{[4],[5]} Google Colab will help in providing the necessary infrastructure to carry out the task free of cost by default Google Colab with 12 GB RAM and 32 GB of Disk space. If any researcher wants to use more, Google Cloud provides necessary infrastructure in a pay-by-hour manner to use the hardware with a fully configured GPU for deep learning applications.^{[6],[7]} The paper is organized into four parts. Part I is the introduction; Part II Background and Related works; Part III Association rule; Part IV presents the results and discussion; Part V presents conclusions. References are given after Part V.

BACKGROUND AND RELATED WORKS

In this paper association rule using Apriori algorithm has been implemented in WEKA 3.8.5. Association rule can be implementable using Python in Google Colab. Google Colab provides necessary infrastructure to implement an algorithm. Google Colab is a cloud-based services. Amazon and Microsoft both will provide high performance computing hardware and the necessary infrastructure to carry out deep learning and machine learning applications. Relatively Google Colab is cost effective.^{[8],[9]} Expósito et al.^[10] showed that Amazon EC2 is having the performance bottlenecks in application scalability, especially with high performance computing infrastructure. A convolution neural network is used for image classification and prediction.^[11] Transfer learning is nothing but a reuse of the trained model for classification and prediction.^[12] Sentiment analysis and opinion mining can be done using the textblob library using the tool Google Colab.^{[13],[14]} Association rule in data mining are widely used by machine learning and artificial intelligence for pattern discovery and forecasting from the obtained data.^[15]

ASSOCIATION RULE MINING

Association rule mining for the relational data and transactional data is given as below:

1. Frequent Itemset Generation, generate all item sets whose support is equal to minimum support
2. Rule Generation, generates high confidence rules from each frequent itemset.

Frequent itemset generation is play a key role in association rule for building the rule. Given a set of transactions T , the goal of association rule mining is to find all rules having

1. support equal to minimum support threshold

2. confidence equal to minimum confidence threshold.

Association Rule Mining is defined as “Let $I = \{ \dots \}$ be a set of ‘n’ binary attributes called items. Let $D = \{ \dots \}$ be set of transaction called database. Each transaction in D has a unique transaction ID and contains a subset of the items in I . A rule is defined as an implication of form $X \rightarrow Y$ where $X, Y \subseteq I$ and $X \cap Y = \emptyset$. The set of items X and Y are called antecedent and consequent of the rule respectively.” Learning of Association rules is used to find relationships between attributes in large databases. An association rule, $A \Rightarrow B$, will be of the form “for a set of transactions, some value of itemset A determines the values of itemset B under the condition in which minimum support and confidence are correlated”.

The probability that item I is not frequent is if:

- $P(I) < \text{minimum support threshold}$, then I is not frequent.
- $P(I + A) < \text{minimum support threshold}$, then $I + A$ is not frequent, where A also belongs to itemset.
- If an itemset set has value less than minimum support then all of its supersets will also fall below min support, and thus can be ignored.

DISCUSSION AND RESULTS

In this paper, association rule has been used. Apriori algorithm perform two step operation, in the very first step all item set which is greater than the specified minimum support given by the user are going to consider for the further operation. In the second step all rules are considered which are greater than specified minimum confidence specified by the user. Rule which is having highest confidence that rule can be chosen as best possible rule. The association rule in data mining are going to play a key role in pattern recognition in data mining. Apriori algorithm is applied to find out and comprehend the underlying patterns involved in the superstore dataset. In WEKA 3.8.5 tool, associate tab has to be used to select Apriori algorithm and in the setting, there is a provision to set the minimum support as shown in the Fig 1. Minimum support and confidence these two play a pivotal role in association rule. The same association rule can be used for the market basket analysis. Fig 2 shows rules generated by the minimum support and confidence for the superstore dataset. The first rule implies with 92 percent confidence that if biscuits is true, frozen food is true, fruit is true and total is high in 788 instances, then it is true for bread and cake in 701 instances. In the similar lines second rule

implies with 92 percent confidence that if baking need is true, biscuits is true, fruit is true and total is high in 760 instances, then it is true for bread and cake in 696 instances. Third rule implies with 92 percent confidence that if baking need is true, frozen food is true, fruit is true and total is high in 770 instances, then it is true for bread and cake in 705 instances. Fourth rule implies with 92 percent confidence that if biscuits is true, fruit is true, vegetable is true and total is high in 815 instances, then it is true for bread and cake in 746 instances.

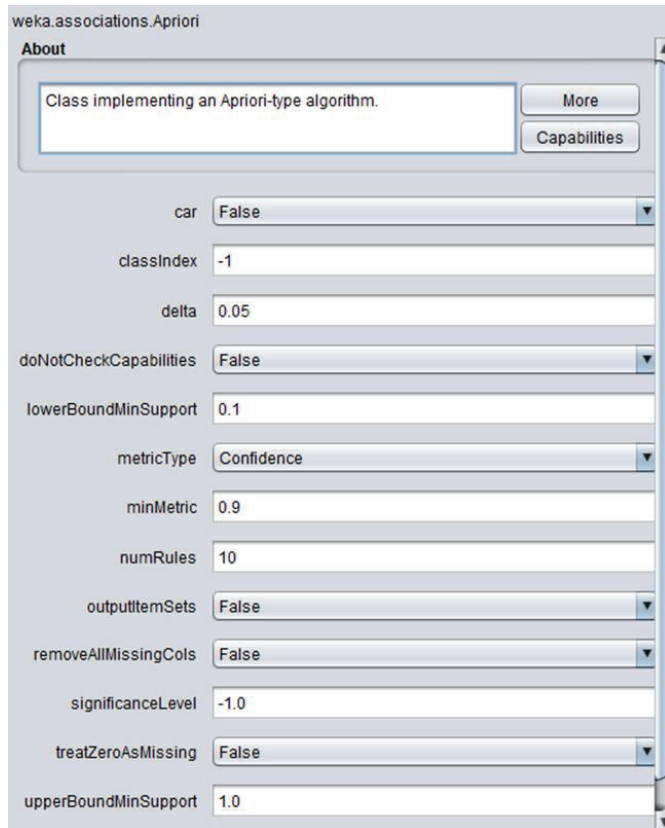


Figure 1: Showing the Setting for the Apriroi Algorithm in WEKA 3.8.5

Fifth rule implies with 91 percent confidence that if party snacks food is true, fruit is true, and total is high in 854 instances, then it is true for bread and cake in 779

Best rules found:

1. biscuits=t frozen foods=t fruit=t total=high 788 ==> bread and cake=t 723 <conf:(0.92)> lift:(1.27) lev:(0.03) [155] conv:(3.35)
2. baking needs=t biscuits=t fruit=t total=high 760 ==> bread and cake=t 696 <conf:(0.92)> lift:(1.27) lev:(0.03) [149] conv:(3.28)
3. baking needs=t frozen foods=t fruit=t total=high 770 ==> bread and cake=t 705 <conf:(0.92)> lift:(1.27) lev:(0.03) [150] conv:(3.27)
4. biscuits=t fruit=t vegetables=t total=high 815 ==> bread and cake=t 746 <conf:(0.92)> lift:(1.27) lev:(0.03) [159] conv:(3.26)
5. party snack foods=t fruit=t total=high 854 ==> bread and cake=t 779 <conf:(0.91)> lift:(1.27) lev:(0.04) [164] conv:(3.15)
6. biscuits=t frozen foods=t vegetables=t total=high 797 ==> bread and cake=t 725 <conf:(0.91)> lift:(1.26) lev:(0.03) [151] conv:(3.06)
7. baking needs=t biscuits=t vegetables=t total=high 772 ==> bread and cake=t 701 <conf:(0.91)> lift:(1.26) lev:(0.03) [145] conv:(3.01)
8. biscuits=t fruit=t total=high 954 ==> bread and cake=t 866 <conf:(0.91)> lift:(1.26) lev:(0.04) [179] conv:(3)
9. frozen foods=t fruit=t vegetables=t total=high 834 ==> bread and cake=t 757 <conf:(0.91)> lift:(1.26) lev:(0.03) [156] conv:(3)
10. frozen foods=t fruit=t total=high 969 ==> bread and cake=t 877 <conf:(0.91)> lift:(1.26) lev:(0.04) [179] conv:(2.92)

Figure 2: Showing Association Rule for the Superstore Dataset

instances. Sixth rule implies with 91 percent confidence that if biscuits is true, frozen food is true, vegetables is true and total is high in 797 instances, then it is true for bread and cake in 725 instances. Seventh rule implies with 91 percent confidence that if baking needs is true, biscuits is true, vegetables is true and total is high in 772 instances, then it is true for bread and cake in 701 instances. In the similar grounds 10 rule was generated according to the settings given in the Fig. 1. User may change the settings according the need of the application. Rule started with the 92 percent confidence and the last rule was generated with 91 percent confidence as shown in the Fig. 2. Once the rule is generated it can be utilised for the market basket analysis, further it adds value in generating any machine learning application.

CONCLUSION

This paper focuses on implementing association rule using Apriori algorithm. This paper describes execution of popular data mining algorithm named Apriori for superstore dataset in arff file format. Association rule has been generated with the help of support and confidence in WEKA 3.8.5. To generate the association rule with the minimum support and confidence has been applied to superstore dataset. The first rule implies with 92 percent confidence that if biscuits is true, frozen food is true, fruit is true and total is high in 788 instances, then it is true for bread and cake in 701 instances. In the similar lines second rule implies with 92 percent confidence that if baking need is true, biscuits is true, fruit is true and total is high in 760 instances, then it is true for bread and cake in 696 instances. It was seen that how the various kinds of data can be deduced and the sales performance of the supermarket and grocery stores can be enhanced. That was one example of the utility of the Apriori algorithm. Not only in supermarkets, but this concept is also widely used in other significant industries such as healthcare industries, and so on. It does enable the

industry to bundle products depending on the customers' characteristics. Although it is a time-consuming process still makes work easier wherever there is the involvement of a large database. This association rule can be utilized for market basket analysis. For future research direction, researchers can employ the GPU to process the deep learning application using Google colab. There will be a lot of new dimensions created and added to this popular concept and tool.

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Critical Socio-Economic Success Factors of Technology based Start-ups

A Study on Technology Management

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ABSTRACT

Startups based on technology contribute considerably to the creation of employments and socio-economic development, their success should be ensured. Despite their need, technology-based startups fail at a high rate around the world. Based on an investigation of theories on human, social, and organizational behavior, the goal of this study is to identify crucial socio-economic success factors for technology-based startups.

For the Socio-Economic Success Factors for Startups based on technology, the following effects were discovered:

- *Technological Surveillance*
- *Knowledge Absorptive Capacity*
- *Dynamic Capability*
- *Innovative and Entrepreneurial Culture*
- *The Perceived Performance of a Product and/or Service, Customer Satisfaction*
- *The Quality of a Product and/or Service*
- *Customer Satisfaction.*

This study investigates the influence of entrepreneurial, company-specific, and outer environment-related aspects in influencing the ability of competitiveness in Indian technology-based startups, utilizing start-up success rate as a benchmark and success and survival analysis methodologies to analyse the data.

Furthermore, among the external environment-specific characteristics, the region's Systematic Development Growth is demonstrated to have a substantial effect on the ability of competitiveness of Indian startups based on technology (borderline significant). This research adds to the current literature by empirically identifying the major entrepreneur/startup-specific, firm-specific, and outer environment-specific elements that influence the competitiveness of Indian technology-based startups in the early stages of growth in a developing country.

The findings of the study will assist technology-based startup owners and policy-makers to make required changes in their policy-making and strategy to improve the competitiveness of the technology-based startups functioning in our country.

Keywords: Technology-based Startup, Critical Success Factors, New Technology-based Firm, Innovation and Entrepreneurship, Economic Success Factors, Systematic Development Growth

INTRODUCTION

Startups based on Technology have emerged as a credible vehicle for employment creation, innovation, and profit creation as countries shift to knowledge-based economies. The major drivers of this transition have been entrepreneurial/startup leaders and their novel company models that take advantage of changes in the outer environment. In the last five decades, the

rate at which new technologies, inventions, and their dissemination to the masses has advanced tremendously, as a result of this sudden technological progress, new and innovative business opportunities have arisen, resulting in the development of new products, processes, and methods for meeting people's demands. According to the definition of Startups based on technology "An investment in a project that assembles and deploys

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specialized persons, heterogeneous scientific and technological knowledge-based assets for the purpose of profit generation and to create a successful business". This trend is not exclusive to India. Despite the fact that it is still in its infancy, India has emerged into the world's top three startup ecosystem in terms of the number of startups. Over the last decade, India has seen a steady increase in the number of start-ups, with over nine thousand technology-based start-ups operating in the country, rising at a rate of 12 to 15% per year. In the first nine months of 2019, the Indian start-up ecosystem attracted over 390 active institutional investors, who funded deals totaling over \$4.4 billion. As of 2019, there are about 24 active unicorns (startups valued at more than \$1 billion) operating out of India, and the sector has generated about 60,000 direct jobs and about 150,000 indirect jobs.

The foregoing advancements in startups based on technology look to be quite promising on a macro level. However, it should be highlighted that the failure rate for startups based on technology is extremely higher than before, with the majority of them failing within the first couple of years of operation. Businesses' survival and performance in the twenty-first century are increasingly dependent on their ability to compete. Prior study has found that in their early stages, digital startups must cope with much uncertainty across many distinct dimensions. As a result, it is reasonable to infer that all contributions credited to the startup based on technology sector come from the few start-ups that are able to navigate through the numerous hurdles they face in their early years of operation to survive and emerge successfully.

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. This study has been done to identify the important parameters or factors (start-ups or founder-specific, business-specific, and external start-up environment-related) that acts as a catalysts in enhancing the competitiveness of technology-based start-ups operating in India, using socio-economic success factors as a benchmark for achievement of a minimum threshold level of competitiveness.

LITERATURE REVIEW

Ghosh, Bhowmick & Guin (2014), according to the author 'uncertainty' prevents entrepreneurs from adopting entrepreneurial actions such as new or updated product creation, getting into new markets, and so on, uncertainty is currently the most important research

themes in management and startups literature. Because the entrepreneurial climate in emerging countries is typically facilitated by shadowed and bureaucratic legal systems that fail to protect IP rights and other economic interests, uncertainty takes on even greater relevance. The issue has become considerably more complicated in India as a result of social, economic, and political developments caused by discontinuities.

Kalyanasundaram (2018), the failure rate of startups in any country is unexpectedly high.. As a result of this occurrence, the costs of failure for entrepreneurs in the ecosystem are higher. According to the author, failed startups have a lot of lessons to teach the ecosystem and can help aspiring entrepreneurs, but this field hasn't been well examined in comparison to the literature on successful startups.

Sivathanu & Pillai (2019), The role of entrepreneurial orientation, entrepreneurial bricolage, technological orientation, sustainability orientation, and trust in the sustainable enterprise performance of tech companies in India is investigated experimentally in this study. It employs a framework that is based on entrepreneurial bricolage, elite group, and knowledge view theories.

Kripa & Mohamed (2008), according to the study the adoption pattern, socioeconomic profile of mussel farmers, variances in farming methods, gain variations, development of business, and societal variables influencing the emergence of this new industry were all investigated in India. Villagers have been using the farming method since 1996, and as a result of its quick expansion, India is now one of Asia's top 10 farmed mussel producers.

Jyoti & Singh (2020), this study examines the connection of socio-economic characteristics of start-ups with their size in Gujarat, India. It also analyse the determinants or factors affecting the yearly sale of start-ups. It contains initial data derived from a survey of hundred and twenty startup leaders. The determinants of start-ups were studied using linear and semi-log linear regression models. Profit regression models were used to evaluate the elements that influence the annual sale of start-ups.

RESEARCH METHODOLOGY

A systematic literature review is a multi-step process that provides directions to the researchers through identifying their study goal and identifying how to find publications. To create a systemic, 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 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.

Planning the Review

The below questions concerning the factors that determine the success of an Startup based on technology are posed in order to answer the research topic.

Q1: How do you define success in a technology-based startup?

Q2: What elements have an impact on your success?

Q3: What are the many types of success criteria and how are they classified?

Q4: What are the steps of growth and what influences each step?

Development the Revision

Tables 1 and 2 indicate the inclusion and exclusion criteria that were taken into consideration.

The keywords, factors, determinants and their descriptions were used to seek the primary data.

Table 1: Inclusion Criteria

<i>Inclusion Criteria</i>	<i>Reason for inclusion</i>
Focus of the Research	Studies that describe the critical success factors for startups based on technology and specify the factors and give the development steps.
Qualitative empirical studies	These studies were taken because they provide qualitative data for the research to begin and to assess the primary data.

Table 2: Exclusion Criteria

<i>Inclusion Criteria</i>	<i>Reason for Exclusion</i>
Criteria for Analysis	Exclude studies that do not consider startups based on technology and innovation.
Focus of the Research	Those research papers that do not provide research methodology, numerical exam (quantitative statistics) and analysis or outcomes.

Because journal articles are regarded valid knowledge and authoritative statements on the subject, the review was confined to publications in fellow-reviewed journals, excluding novels, book published chapters, and conferences.

The Outcomes of the Review

The results of the article selection procedure yielded 10 studies, out of which 7 were chosen. Only one study was a structured literature review; the remaining 9 were contributions that were reviewed in order to address the research sub issues.

Following the selection of articles, each database's publication trends were found. As shown in the study, the sample of publications generated by this methodology was published between 2008 and 2022, however more than half of the research papers were published after 2015. As a result, the current study appears timely, given the recent surge in scholarly studies on the socio-economic elements influencing the success of technology-based startups.

ANALYSIS AND DISCUSSION

According to the literature review, numerous definitions of start-ups have been supplied by the tech-based research community, current researchers, developmental organizations, policy creators and makers, development dreamers and thinkers, government agencies representatives, and research based organizations. There is no scientific, reasonable, uniform, or globally acceptable definition of a start-up, though. A start-up is a freshly formed firm or enterprise that is in the early stages of growth and has a market demand.

As the fourth industrial revolution happens, there are problems related to labor forces being vanished by technology, as well as deterioration in work-life balance and job quality. This research looks on the impact of technology-based startups on job market and startup-innovation. Using empirical data from the Korea Labor Institute's workplace panel data, this study finds that the action of technological innovation has an impact on employment quality and inventive performance for technology firms. The findings show that job quality is a key factor in a technology based startup's ability to innovate. The findings of this research will have practical consequences for improving technology-based start-ups.

New socioeconomic success criteria have been identified:

This section discusses and promotes new socio-economic success elements that include favorable impact on the success of technology-based businesses. In regard to corporate performance, several theories linked to technological management, as well as theories on human, social, and organizational behavior, has been reviewed. Based on these theories and all other data sources, the following socioeconomic success determinants were identified:

1. Technological surveillance is the process of systematically identifying, analyzing, disseminating, and exploring technical information for the purpose of ensuring the survival and growth of a corporation. Innovative firms can use technological surveillance to gather knowledge on other products, services, and rising technology, allowing them to achieve long-term success.
2. Knowledge absorptive capacity is known as the strength of the business team to recognize, digest, and utilize external to the organization to add value-creation to customer's knowledge.
3. Perceived performance refers to a company's ability to deliver a much higher value product or service to its customers. Brand loyalty and company growth are bolstered by higher levels of performance in attaining customer expectations.
4. Quality is a set of intrinsic features or properties of products and/or services that enable a company to meet consumer expectations and achieve business success.
5. Customer satisfaction is now the top priority for small startups, medium, and large businesses. It is a key factor to company's sustainability and growth. Companies, on the other hand, differ in their success in retaining consumer pleasure, which takes distinct forms for each.

Q1. How do you define success in a technology-based startup?

Several studies have been published in the literature that attempt to define startup success. Success is a term that has diverse meanings for different individuals; entrepreneurs are likely to have different definitions of success than an investor or a customer/client. For example, one entrepreneur may define success in terms of the company's ability to generate increased revenues, while another may define success in terms of personal contentment, while an investor can define it as the ability to

generate more money through the company in which they invest.

Q2. What elements have an impact on your success?

For the purposes of this study, variables refer to the components that can influence a startup's success or failure, and the factors that positively or adversely influence the positive (+) or negative (−) signals are acknowledged. All the parameters explained below are interchangeable and must be considered when defining the Startup's competitive strategy.

Q3. What are the many types of success criteria and how are they classified?

The categories allow for the categorization of success variables that have similar properties. Three success factor categories have been identified from the selected studies: organizational, individual, and external.

The researches in the organizational sectors, often known as organizational factors, have focused on the characteristics such as the organization's age and size. The importance of the company's location as a success element since it helps the business to be more closer to providers and, more importantly, to the possible clients.

The issues connected to the startup's human capital are represented by the individual's category. Many studies have looked into the relationship between a company's human capital and its success.

The study of ways to fund a startup has gotten a lot of interest in recent years. Better financial capacity allows a company to be more flexible in terms of product and technology changes, which leads to better client demand adjustment and adaptability. One of the most common reasons for entrepreneurs to abandon their company ventures is a lack of funding.

Q4. What are the steps of growth and what influences each step?

The development steps are the steps that make up a startup's life cycle. The six stages are as follows: getting ready for Start-up, where services and resources are linked for the creation, strengthening, and up-scaling of the business in the market; incubation process, where services and resources are linked for the creation and development of the business in the region; incubate performance measures, these measures assist in gaining a better

understanding of where their Startups are incubated and how to improve their value creation; exit policies, an experienced startup incubator must be capable of gathering and providing professional knowledge and experience in order to assist their Startups in gaining success because not all incubated Startups have reached the maturity level to be able to operate individually; an extended period of care can provide them more strength in competing with other startups.

CONCLUSION

This study conducted a structured literature review on the crucial success criteria of Startups based on technology, resulting in the identification of 10 primary studies on the issue, of which 7 were chosen as research studies. Despite the fact that there are several research papers on the socio-economic development and success aspects of new startups, there is no genuine consensus in the literature on socio-economic success factors. As a result, our study conducted a Systematic Literature Review with the purpose of finding the startup's important success criteria. The researchers identified 5 essential success elements from chosen studies, which they distinguished into three categories: organizational, individual, and external. The life cycle of a startup is a series of steps that it goes through during its development.

However, there is no established consensus in the literature on the theme. The following steps are considered in this research: seed, early, growth, and expansion. As a result, success has been defined as greater sales, customer happiness, meeting the needs of consumers and organizations, having higher profits as compared to the industry average, and being purchased for a price by another firm. The findings of this study complement to the existing literature on success variables by providing further information. Furthermore, the findings will be useful to startup managers, entrepreneurs, information technology advisors, researchers, and national governments, as they will be able to use the findings in this paper as a guide when developing tactics, strategies and programmes to aid the survival and success of these types of startups.

LIMITATIONS OF THE STUDY

While our study aimed to add knowledge to the primary focus of the study, there are a many limitations to be aware of. This study looks at the phenomena of start-up based on new technology survival as a benchmark for

assessing their ability to compete, however it only looks at one sector of the startups based on technology and in one country, and thus the findings are limited.

SCOPE FOR FURTHER RESEARCH REFERENCES

Extending the study's scope to include some more tech-based companies in the same geographical region, or a inter-country comparison of one specific sector, would provide more in-depth, globally applicable insights. Furthermore, because the study focuses on pre-growth technology-based start-ups, only competitiveness and their strength has been examined.

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Service Quality of Financial Institutions

A Review Study

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ABSTRACT

Financial Institutions like other assistance giving firms are attempting to further develop their administration quality to make clients happy with their administrations to make due in the unique business climate. This review paper utilizes the SERVQUAL model to recognize the gap between borrowers' expectation and perception of the financial institutions in India. Results of the review illustrated that borrowers' expectations are more with the private institutions and the degree of fulfillment is additionally higher while they manage the private institutions. To fulfill the borrowers' expectations the public institutions should work on the significant dimensions of service quality i.e. Empathy, Assurance and Reliability.

Keywords: SERVQUAL Model, Empathy, Assurance, Reliability

INTRODUCTION

Difference of performance and expectation of service by borrowers is known as service quality. In case of Housing Finance Companies, service quality means whether the company is able to meet the expectation of the borrowers or not. The service sector makes large contributions to the social as well as economic development of countries around the globe (Daniel and Harrington, 2007). At present this sector plays a significant role in the wealth making of a nation which is reflected by various indicators like GDP, added value etc. Most of the countries around the world having strong economies are dominated by services, which are account for more than 70 per cent of their GDP (Ostrom et al., 2010). The sector has also the largest share in the GDP in India also, accounting for fifty five percent. Service quality Satisfaction of borrower is basically judged by verifying the abilities of company to meet out its borrowers' expectation. Quality in service is quite different from quality of goods. The dimensions of service quality are defined mostly from customers' expectations and are extremely difficult to measure in quantitative terms.

REVIEW OF LITERATURE

Brahmbhatt and Panelia (2008) assessed the service quality of banks. Objective of above study was to analyze the service quality and customer satisfaction in public, private and foreign sector banks. Primary data was gathered for the purpose of above study. Sample of the study was consisted of 246 respondents, 82 each from three selected banks by using stratified sampling. SERVQUAL instrument was used for the purpose of study which included 22 paired statements of perception and expectation related to service quality. Factor analysis was used by the researcher to know the crucial factor contributed to satisfaction of the respondents. It was found by the researcher that foreign banks have least service quality gap than public and private sector banks. Tangibility factor was found to be good in all banks because there was very less gap in this dimension. Service quality plays very vital role in determining the satisfaction level of the customers.

Kumar and Gangal (2011) examined the service quality and satisfaction level of borrowers of HDFC bank in Agra and Delhi. Sample of the study was consisted of 100 respondents by using random sampling method.

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Primary data was collected through questionnaire. Weighted mean and correlation methods were used to analyze the data. The result revealed that service quality of staff was found to be satisfactory in select banks. Many factors i.e. “cost of services”, “Privacy of transaction”, “response time”, etc., were found to be dissatisfies. The study also suggested that banks should provide a variety of services and products to its customers. Banks should focus more on satisfaction level of customers.

Mohammad and Alhamadani (2011) analyzed the perceived service quality and satisfaction level of customers in banks. SERVQUAL model was used to analyze that above objective. The sample of the study was consisted of 260 respondents from 13 commercial banks. Primary data was collected through questionnaire. Various techniques, i.e. descriptive statistics, correlation, Regression and factor analysis were used to analyze the above objective. Significant difference was found among all dimensions of service quality. Also there was significant impact of service quality on satisfaction level. Also service quality plays a very crucial role to satisfy the customers. So there is a need to focus more on service quality to increase the satisfaction level of borrowers.

Kumar (2012) analyzed the performance of LIC and HDFC in Hyderabad. The objectives of the above study were to analyze the trends in housing finance by LICHFL & HDFC and also to evaluate the impact of tax considerations on housing finance with respect to LICHFL & HDFC. For the purpose of above study he collected both primary and secondary data. For the purpose of primary data they collected data from 1000 respondents, 500 each from HDFC and LIC housing finance borrowers. On the basis of above study they concluded that resource structure of equity base is not sound enough to meet their requirements and also they observed that their dependency is more on debt funds in their efforts of resource mobilization. Reserves and surplus of HDFC in absolute terms are greater than that of LICHFL. And the persons having high income are also taking benefits of tax exemption; it is the one of the crucial motivator for them.

Lohani and Bhatia (2012) evaluated the “service quality of public and private sector banks in Lucknow”. The objectives of the above study were to analyze the gap between the perception and expectation of respondents. Primary as well as secondary sources were used to analyze the data. Secondary data was collected from the various text books and research papers of

service quality. For the purpose of primary data a sample of 410 respondents were selected from Lucknow city. A questionnaire was prepared including statements of perception and expectation of service quality. It was found by the researcher that majority of the respondents were male who were applying for loan. Ambience and infrastructure facilities of public sector banks were not found good. Also the dimensions, i.e. responsiveness and empathy were having more gap between expectation and perception. Banks need to concentrate more on these dimensions to retain long term relationship with their customers. Public sector banks need more to improve these factors.

Sangwan and Bhan (2012) in their study made a comparative analysis between the public and private sector banks with regards to their home loan. The objectives of the study were to analyze the customer response and satisfaction towards home loan. A sample of 200 respondents was selected. Primary and secondary both sources were used for the purpose of above study. The finding of the study showed that private sector banks were leading with regard to various schemes and were performing better than public banks. People were attracted towards home loan due to lower rate of interest. Majority of people were applying for loan to construct the new house. The study also suggested that public banks need to focus more on their procedure of loans.

Bharwana, Bashir and Moshin (2013) evaluated the “impact of service quality on satisfaction level of students in Pakistan”. It was purely based on primary data, which was collected from a sample of 185 youngsters of private colleges. Questionnaire instrument was used for the purpose of above study which includes statements related to service quality and satisfaction level. It was found by the researchers that there was a high degree of correlation between service quality and satisfaction level. Among the all five dimensions tangibility and assurance were found to be highly important and empathy was found to be least important. There was a negative correlation between satisfaction level and empathy. It was also found that there was a change of 28% in customer satisfaction level due to service quality. The researcher suggested that if management will concentrate more on service quality, the level of satisfaction can be more enhanced.

Ilyas et al. (2013) evaluated the perceived service quality of banks customers. Primary data was collected through standardize questionnaire. SERVQUAL model

was used to analyze the above objectives. Researcher found the gap between perceived and expected service quality. They selected a sample of 175 respondents consisted equal number of males and females. On the basis of the study researcher found that perceived service quality was exceeding expected service quality on three dimensions, i.e. “tangibility”, “Reliability”, and “Responsiveness” and banks were lacking in two dimensions, i.e. “Assurance” and “Empathy”. Overall gap was found to be very low.

Kaur (2013) explored customer satisfaction towards service quality of HDFC and GIC housing finance limited. Data was collected through questionnaire from 100 respondents. The study found that HDFC housing finance limited sanctioned the highest amount of loan as compare to GIC housing finance limited. Cost of HDFC was comparatively higher than of GIC HF. Majority of respondents were availing loan for buying of houses and flats. Study also recommended that new schemes must be issued by these companies for those people who belong to below property line so that their dependency on money lender can be reduced. Also charges like processing fees, conversion fees and number of formalities for availing loan should be minimized.

Malik and Saini (2013) analyzed the gap between perceived and expected service quality in banking sector. The data of the study was collected from a sample of 400 respondents by applying convenience sampling. Data was gathered through questionnaire through primary data. Descriptive statistics and chi square test were used to analyze the data. While evaluating the gap between perceived and expected it was found that SBI was found to be the top bank among all selected banks which was followed by ICICI bank, HDFC bank, etc. Oriental bank of Commerce was having lowest rank among all other banks selected by researcher.

Perera and Aruppala (2013) examined the service quality of NDBPLC bank of Sri Lanka. The data of the study was gathered from a sample of 80 customers of NDBPLC bank through questionnaire. The sample was selected by using a simple random sampling. The result of the study showed that tangibility was one of the most significant factor contributed to satisfaction among the other all dimensions of service quality. Also responsiveness was found be the least significance factor. Therefore researcher suggested that banks should concentrate on physical appearance and should improve their communication system. Soft skills training should be provided to all the employees engaged in banks.

Vanaja and Sindhuja (2013) evaluated the factors influencing the behavior of borrowers of HDFC Ltd. the study was descriptive in nature. The sample of the study was gathered from a sample of 150 respondents by using convenience sampling method. Structured questionnaire was used by the researcher to collect primary data. Various statistical techniques, i.e. percentage analysis, Chi-square test, factor analysis were used to analyze the data. It was found that perception of borrowers towards service quality was average. Communication system was no found well so there is a need to improve the services i.e. SMS, Email and telecalling to customers. Also factors i.e. flexible, pre payment systems were found more significant in choice of housing finance companies.

Dewan and Mahajan (2014). Found in their study the perceived quality and its dimensions in private sector banks. “SERVQUAL was used to measure service quality as a multi-dimensional construct across five dimensions: tangibility, reliability, responsiveness, assurance and empathy”. On the basis of above study they concluded that female customer had a less positive perception of service quality as compare to male. Also they found that married person had a positive perception towards service quality as compare to unmarried persons.

Garg and Kumar (2014) compared the marketing strategies adopted by public and private banks. The finding showed that more growth was in public sector bank up to 2005-06. Interest rate and processing fees of private sector banks was higher than of public sector banks. Housing finance companies were not properly verifying the status, nature and purpose of home loan. These companies are not marketing their products properly. Charges like hidden costs and processing fees of private sector banks are more as compare to public sector banks. Competition between housing finance companies is continuously increasing. The rate of interest charged by Indian companies was found more than that of foreign companies. Suggestion was made by researcher that government of India and RBI must think about people who belongs to low income category. Subsidies should be provided by the government to those home loan borrowers having low income.

Karim and Chowdhury (2014) looked into the impact of service quality on customer satisfaction. The study was purely based on primary data which was gathered from a sample of 110 respondents by using convenience sampling technique. Data was collected by using

structured questionnaire. Various statistical techniques i.e. regression, descriptive analysis were used for the purpose of above analysis. It was found by the researcher that tangibility factor had the highest mean score among all dimensions and responsiveness had the lowest mean score. There was a significant impact of service quality dimensions on satisfaction level of customers. Service quality is the most significant determinant in enhancing customer satisfaction.

Agarwal and Arya (2017) assessed the satisfaction level of home loan borrowers and also made a comparative analysis between SBI and LICHFL as regards to various schemes. Data was collected from 90 home loan borrowers including 40 from SBI and 50 from LICHFL. Primary data was collected for the purpose of above study. Various techniques, i.e. chi-square test, percentage analysis and proportionate analysis were used for the purpose of above study. For the purpose of primary data open ended interview was conducted and secondary data was collected from various sources, i.e. Journals, newspaper and pamphlets, etc., the study found that borrowers were preferred more to LICHFL than SBI bank. Due to providing better facilities by Housing finance companies, young generation are going for NBFC's than banks. LICHFL had better performance as regard to disbursement of loan.

Otwani (2017) throw light on customer satisfaction by comparative analysis of HDFC and Allahabad bank. Primary data as well as secondary data was used for the purpose of above study. Primary data was gathered from a sample of 100 respondents by using questionnaire and interview method and secondary data was gathered from various reports, i.e. annual reports, research paper on housing and websites of selected banks. The study found that customers of HDFC were more satisfied than bank of Allahabad. Processing fees and interest rates were lower in case of HDFC than Allahabad bank. Customers were considering more to word service quality and time to process while taking loan from banks. The study also suggested that banks should introduce new plans for low income group people and attractive incentives should also be provided to home loan borrowers.

Riar and Bhalla (2016) evaluated the problems faced by home loan borrowers in Punjab. A sample of 1000 respondents was chosen by the researcher by using judgmental sampling technique. Primary data was collected by using structured questionnaire. Total 36 statements were structured by researcher on five point likert scale. Chi square test, ANOVA and factor

analysis were used to analyze the data. The result of the study revealed that many problems, i.e. Interest rate, processing time, inflexibility, stringent conditions, hidden costs, etc., were faced by borrowers. The study also suggested that housing finance institutions need to focus on all the problems faced by the borrowers.

CONCLUSION

Borrower's expectations are more with the private institutions and the level of satisfaction is also higher while they deal with the private institutions. Competition wise the private institutions are moving ahead of the public sector. In order to satisfy the customers and gain their patronage the public institutions should focus on improving the service in terms of tangibility, reliability, responsiveness and empathy. The private institutions appear to be a better option as perceived by the customers but they should try to provide services so as to assure the customers and give them confidence. In order to achieve success business firms should focus on customer oriented services, which will lead to long term bonding with their customers. It can be concluded that private institutions have been successful to a greater extent in achieving such relationship with customers than the public institutions.

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The Impact of Covid-19 on Telecom Administration

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ABSTRACT

The impact of the pandemic spread by the deadly virus Covid-19 has been all encompassing, affecting the entire world. The telecom industry is also not untouched by the ripple caused. As many countries imposed restrictions on travel and movement, people had no choice but to stay confined at their homes and use huge amounts of data for the purpose of work and leisure. The telecom administration went through an overhaul to cater to the new normal created by the pandemic. And the world once again realized that to stay connected there is dire need of telecommunication that is affordable to all strata of people and a network that is reliable and resilient.

The impact of telecom on containing the pandemic has been commendable and so is the positive impact of the pandemic on telecom growth. While the pandemic proved to be a curse for many people who lost their lives and businesses, it proved to be a testimony to the vitality of telecom in today's world. In return, telecom industry all over the world received a fresh lease of life and energy owing to the increase in revenues due to the pandemic. Since people got stuck where they were for months, the only savior as compared to the healthcare workers for businesses and for people seemed to be the telecom network. The study is conceptual in nature. It synthesizes knowledge from existing body of literature on the topic and proposes the association between the telecom industry and the pandemic. Also gives account on the growth of telecom industry resultant of administration for the containment of the virus.

Keywords: Telecom, COVID-19 Pandemic, Healthcare

INTRODUCTION

The impact of the pandemic spread by the deadly virus Covid-19 has been all encompassing, affecting the entire world. The telecom industry is also not untouched by the ripple caused. As many countries imposed restrictions on travel and movement, people had no choice but to stay confined at their homes and use huge amounts of data for the purpose of work and leisure. Telecom companies are aligning their services to help customers when they need networking services more than anything else. In some countries data is used to track the spread of the virus and thus help contain it. Telecom companies are determined to increase network resiliency keeping an eye on the impact of Covid-19 on the long term investments and their plans for 5G. This paper aims at understanding the administration of telecom companies towards fighting and containing Covid-19 and also gives an account on the impact of the pandemic on growth of the telecom industry.

OBJECTIVE

The study is conceptual in nature and aims at understanding the administration of telecom companies towards fighting and containing Covid-19 and discusses the positive impacts that the pandemic has had on the tremendous growth of telecom. The paper proposes the importance of telecom in the face of a crisis like that posed by the pandemic. The paper posits that sound and robust telecom infrastructure can always come in handy when earth is struck by a disaster. Since timely information and communication is the key to contain a disaster and restrain the damage and make recovery.

BRIEF HISTORY OF TELECOM REGULATION

Rightly put by (Noam, 2010), telecommunications infrastructure goes through technology-induced phases, and the regulatory regime follows. Telecom 1.0, based on copper wires, was monopolistic in market structure

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and led to a Regulation 1.0 with government ownership or control. Wireless long-distance and then mobile technologies enabled the opening of that system to one of multi-carrier provision, with Regulation 2.0 stressing privatization, entry, liberalization, and competition. But now, fiber and high-capacity wireless are raising scale economies and network effects, leading to a more concentrated market. At the same time, the rapidly growing importance of infrastructure, coupled with periodic economic instabilities, increase the importance of upgrade investments. All this leads to the return for a larger role for the state in a Regulation 3.0 which incorporates many elements (though using a different terminology) of the traditional regulatory system—universal service, common carriage, cross-subsidies, structural restrictions, industrial policy, even price and profit controls. At the same time, the growing role of telecommunications networks of carriers of mass media and entertainment content will also lead to increasing obligations on network providers to police their networks and assure the maintenance of various societal objectives tied to mass media. These are predictions, not recommendations.

LITERATURE REVIEW

Disruptions are an inherent part of the telecom industry since it is driven by the technological innovations and constantly strives to make communication faster and better for the world. (Noam, 2006) analyze the long-term lessons of the upturn and downturn in the telecommunications industry during that time. It concludes that volatility and cyclicity will be inherent part of telecom sector in the future. To deal with such instabilities, companies and investors seek consolidation and cooperation. With government stressing on stability more than before, oligopoly was predicted to emerge as the equilibrium market structure with some regulation to govern it.

Telecommunication journey in different countries has chartered different paths of progress depending on the readiness to embrace the new innovative technologies. (Whalley, 2006) pointed out that as far as Nepalese telecommunications industry is concerned, it has substantially changed since the modernization process began in Nepal from the early 1980s. Issues like geography, availability of resources to develop the industry and Maoist insurgency are found to limit the expansion of the telecommunications network.

Telecommunication industry went through tremendous change in the early 2000s. (Palmberg & Martikainen, 2006) point out while the ICT industry is undergoing a potentially disruptive phase due to the convergence between information and telecom technologies and the rapid diffusion. In *Etisalat ICT forum*, 2009 Etisalat highlighted its end-to-end managed telecom and ICT solutions portfolio edge in a challenging economic environment. During the forum, the industry experts shared how ICT can be leveraged to influence business-critical processes to impact the bottom line. Insights were provided on opportunities to enhance productivity, reduce complexities and optimize costs through variety of ICT services. According to Abdulla Hashim, VP, Business Solutions, Etisalat, companies are faced with increasing pressure to justify investments and look for innovative ways to increase efficiencies and reduce costs. In such an environment, Etisalat is well positioned to help companies focus on their core IT infrastructure and allow Etisalat to manage the rest of their complex IT infrastructure. The forum also featured presentations on next generation ICT services, and why they important for businesses in addition to taking a look at the expanding role of telecom firms in ICT services. Factors like an increasingly networked office, rise in mobile workers and data explosion have resulted in a more challenging IT ecosystem which is placed an enormous burden on companies. The forum addressed such issues with delegates getting a view into emerging technologies, best practices, and challenging in e-Business, Mobility, Managed Services and Business Connectivity as part of Etisalat's end to end Managed Telecom & ICT solutions portfolio reported by (Al Bawaba, 2009).

Telecom industry was not the only industry affected by the immense technological innovations. All other industries were catching up in order to survive in the world that was going to be ruled by technology. (Fan, 2010) propose a new conceptual framework to analyze catching-up of domestic companies as latecomers in high-tech industries like the telecom industry. It also asserts the role of government in becoming strategically involved to form a competitive and efficient market environment for innovation. And as far as ICT is concerned, it has been a game changer of sorts in making personal communication easier and faster as well as making business run differently and efficiently. (Deng, 2010) tries to discover the strategic positioning and implementation of ICT in China telecom group.

The study gives an account of how China telecom follows the international steps tightly as far as strategic transformation is concerned. (Deng, 2010) point out that the development trend of information technology is integrating since 1990's in the 20th century, the information technology integrated with the communication technology to become information and communication technology, ICT, which emphasized integration of communication, computer, radio and television technology network. Telecom industry has followed different regulations according to the version of technology used. (Noam, 2010) pointed out that telecommunications infrastructure goes through technology-induced phases, and the regulatory regime follows. Telecom 1.0 was based on copper wires, was monopolistic in market structure and led to a Regulation 1.0 with government ownership or control. Wireless long-distance and then mobile technologies enabled the opening of that system to one of multi-carrier provision, with Regulation 2.0 stressing privatization, entry, liberalization, and competition. But now, fiber and high capacity wireless are raising scale economies and network effects, leading to a more concentrated market. At the same time, the rapidly growing importance of infrastructure, coupled with periodic economic instabilities, increase the importance of upgrade investments. All this leads to the return for a larger role for the state in a Regulation 3.0 which incorporates many elements of the traditional regulatory system-universal service, common carriage, cross-subsidies, structural restrictions, industrial policy, even price and profit controls. At the same time, the growing role of telecommunications networks of carriers of mass media and entertainment content will also lead to increasing obligations on network providers to police their networks and assure the maintenance of various societal objectives tied to mass media. These are predictions, not recommendations made by (Noam, 2010) in Telecommunications Policy, Feb2010.

Telecom industry has implications in the political scenario of the country as well as policy making. (Paragus, 2012) depict how intra- and inter-sector dialogues have resulted in the liberalization and growth of the Phillipine telecom industry. Through meta-analysis of government data, academic research and policy studies about Phillipine telecoms, the study presents a holistic view of the role of political, business and social sectors in policy making and implementation. The study also posits the utility of a proposed dialogue-

based systems framework as a parsimonious solution to the complexity of policy studies. National governments saw liberalization as a viable strategy to restructure their telecom industry. The entry of new players meant the withering of public and private monopolies and the creation of new regulations on how stakeholders could participate in the new marketplace (Painter and Wong, 2007; Stolfi and Sussman, 2001; Samarajiva and Gamage, 2007) Liberalization resulted in significant growth, particularly in the supply of products and services (Samarajiva and Gamage, 2007). Accordingly, successful liberalization models in developed countries (Stolfi and Sussman, 2001; Serot, 2002) were subsequently transplanted into the developing world.

On one hand is the journey of telecom that thrives amongst the ups and downs of the market and the innovations, on the other hand is the pandemic that immediately established an association with the telecom industry. (Verma et al., 2020) in their counterfactual study represent that how a nation like India with special reference to Himachal Pradesh, can adopt, adapt and adept significant national and international approaches followed by the countries and regions to address the COVID-19 pandemic. They have emphasized on the importance of E-governance and the full utilization of IT infrastructure.

TELECOM JOURNEY 2011–2020

Telecom has been a turbulent industry from the very beginning itself. During the last decade, from 2011-2020, the telecom industry has witnessed and survived many upheavals. A brief account of the same is given below by taking excerpts from the annual RBI reports.

Table 1: Excerpts from Reserve Bank of India-Annual Reports (2011-17)

Year	Excerpts of RBI Annual Report
2011-12	<p>Investment in telecom sector has <i>dried up</i>. Structural constraints emerged in key investment drivers in the infrastructure space like telecom-which increased disinflationary costs. High inflation kept aggregate demand and <i>business confidence subdued</i>.</p> <p>Telecom industry <i>slowed down</i> along with number of new cell phone connections, reflecting in part imposition of regulatory penalties and in part plateauing of penetration levels after a period of extra-ordinary growth. Amongst other sectors like electricity, shipping and power telecom has also <i>reported stress</i> contributing to the <i>restructuring of loans</i>.</p>

2013-14	Greater use of technology and increased competition has been seen in the telecom industry. The industry grew exponentially in just 10 years taking the mobile phone user base to nearly 1 billion and paving the way in sharp reduction in long distance call rates.
2015-16	Telecom companies were seen to generate <i>lower than expected revenues</i> after showing a positive trend in the mid of 2016 as compared to the 2015.
2016-17	Telecommunication industries were <i>experiencing declining revenue</i> and a <i>grim profit outlook</i> due to technological innovations and <i>stiff competition</i> among the service providers.

The annual RBI report of 2018-19 acknowledged the fact that penetration of information and communication technologies (ICT) has greatly benefited sectors like telecommunications. The report also posits that telecom instruments, comprising mobile phones and parts of mobile phones among other components, recorded a decline during 2018-19. This coincided with an increase in the domestic production of mobile phones, the impetus to which was provided by the government's Phased Manufacturing Programme, announced in the Union Budget 2015-16. It also reports that India remained the top exporter of telecommunications, computer and information services in the world with share of around 10 per cent. According to the RBI excerpts from the annual report 2019-20 telecom industry has been a remarkable contributor to the growth of the country.

The report quotes that over last two decades, the Indian economy has been driven by the services sector, which comprises a heterogeneous group of economic activities with varying degree of skill and organizational requirements across banking and finance, education, healthcare, information technology, tourism, transport, telecom, trade including e-commerce and space. The report accounts that the services sector has remained the prime mover of the Indian economy over the last three decades. Until 2019-20, it had exhibited resilience and productivity; however idiosyncratic developments, both domestic and global- grounding of an airline; financial sector stress; stalled construction projects; revenue-related issues in telecom; port activity impeded by muted foreign trade; coal production losses impacting railway freight traffic – operated in conjunction with the slowdown in aggregate demand to pull the sector's output to its lowest growth in two decades. The report also acknowledges the progress made on building a modern physical infrastructure in the country over the last five years has been noteworthy in the areas of roads, civil aviation and airport connectivity, telecommunication (including internet and broadband penetration), and ports.

India's Financial Market: Impact of COVID-19 shown above in Chart 1 (Figure 1) depicts the sudden plunge of Nifty 50 on the announcement by WHO declaring COVID-19 as a pandemic. It also showcases

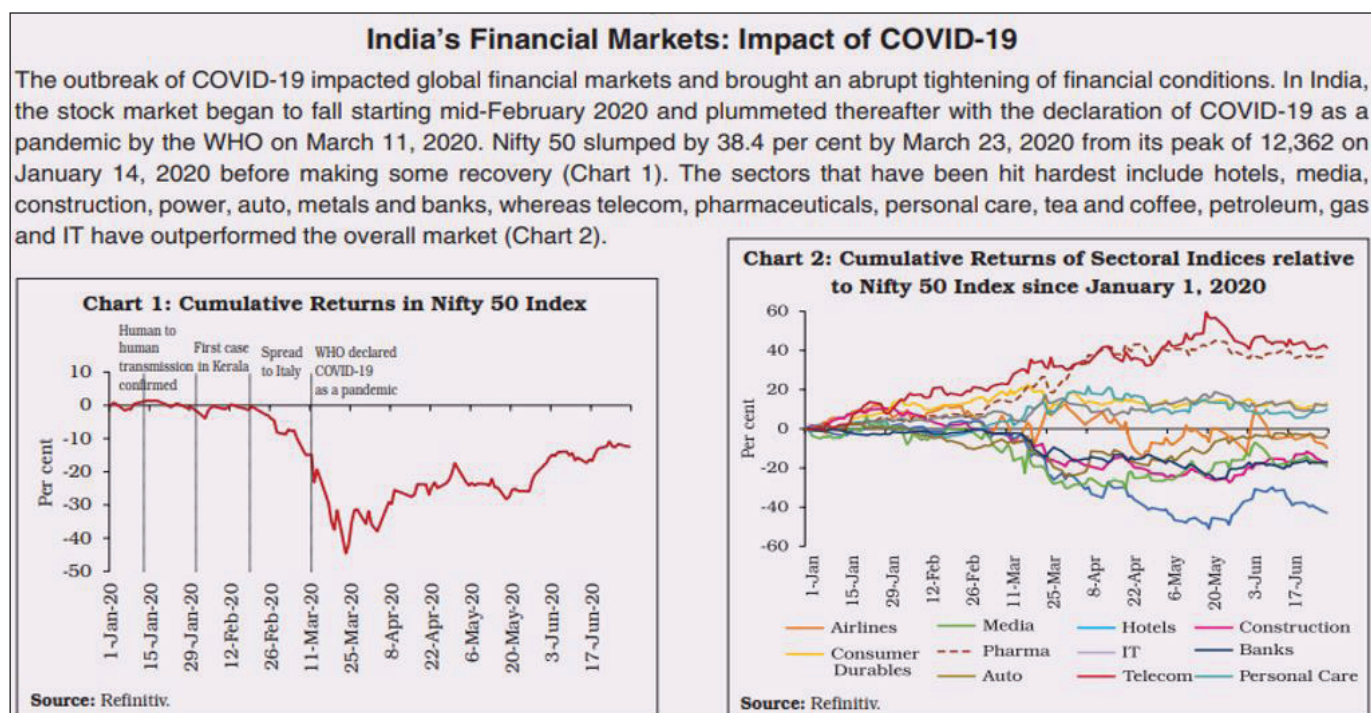


Figure 1: Excerpt from Annual RBI report 2019-20

the revival trend in bits and pieces. On the other hand the Chart-2 gives us the sectors that suffered the most. As we can see hotels, media, construction, power, auto metals and banks were the “hardest hit” in the words of the report. But telecom is amongst few industries that “outperformed” the overall market, again verbatim from the report.

COVID-19: BOON FOR TELECOM

COVID-19, a curse for the world has in fact turned to be a blessing for the telecom industry. Since last few years the telecom industry has suffered major upheavals resultant of market dynamics and disruptive technologies. But the R&D and innovations in the telecom and electronics over the last few decades have huge gains to humankind. (Jhunjhunwala, 2020) put forward that the telecom network is being used for a whole lot of application today providing a large variety of services like education, health care, financial inclusion and disaster management. In India, where a large percentage of people have very low-income, telecom industry made the telephony and Internet affordable to most of its people. It extended the reach of the telecom network to almost every corner of the country. It enabled services which seemed unimaginable. In almost all crisis situation like that created by corona virus, one finds that telecom network can be leveraged to offer help to the needy, administration and coordinators to better manage the disaster. Aarogya Setu for smartphones and Aarogya setu for feature phones are two such efforts, which potentially helped in difficult situation.

POTENTIAL IMPACTS ON TELECOM

(Casey & Wigginton, 2020) the global telecommunication leaders from Deloitte reported that across the globe, telecom companies are taking a variety of measures to improve the overall customer experience and give people better quality of networking services. In the United Kingdom, telecom companies have increased capacity, are offering unlimited call time and data to aid in tracking the spread of COVID-19. According to them the major impacts of Covid-19 on telecom has been the following:

Network Usage and Resiliency

In their article (Casey & Wigginton, 2020) acknowledged the fact that network usage is showing meteoric rise with many telecom companies reporting large spikes. Quite a few countries are showing exponentially heightened volumes of voice calls. COVID-19 also led

to collaborations which seemed unlikely otherwise. For example, operators across the US increased capacity by borrowing spectrum from competitors.

Connotations for the Customer

All over the world telecom companies took myriad of measures to improve the customer experience and give people access to networking services. In the UK, telecom companies increased their capacity, and offered unlimited minutes, also provided anonymized data in order to aid in tracking the spread of COVID-19. Telecom companies also offered networking tools for free or at reduced cost to aid customers in working from home. Similarly, work productivity platforms were launched to cater the newly created demand. With stores shut down across the globe, telecom companies adapted to new ways to sell products and provide service to customers with self servicing becoming increasingly important. On the hind side the launch of new smart phones deferred due to supply chain constraints.

Usage of Consumer Data to Track and Contain COVID-19

Data is increasingly being used by governments and organizations to track and contain the spread of the virus. In China, due to its vast landscape and large, highly mobile population, the efficiency of communication and data exchange has been indispensable in screening for infected individuals and controlling the outbreak. More countries started using the cellular data to track the spread of the virus, which may raise questions about data privacy in the future.

Financial Impacts

Historically telecom companies have been less affected by recessions, some telecom companies faced issues with cash flow similar to the other industries. Telecom companies that owned sports-related media saw a bit of negative impact on advertising driven revenues, given the amount of sports league cancellations. Many companies looked at long-term investments in their networks, and in some cases, pulling forward investment in 5G because of its increased reliability and speeds. (Casey & Wigginton, 2020) posited that there may be a renewed focus on technology-led M&A to secure differentiating assets and, in some cases, opportunistic plays for innovative start-ups.

The Future Steps

(Casey & Wigginton, 2020) sum up beautifully that

the telecom leaders will be defined by what they do along the three dimensions to managing crisis: respond, recover, and thrive. According to them the key next steps would include:

- Testing networking reliability
- Ensuring call centres to be well equipped to handle increases in volume
- Considering the impact of government stimulus incentives on telecom companies.
- Last but certainly not the least assessing opportunities for more automation, such as low-/no-touch options for customer-facing processes as well as internal tasks.

DISCUSSION

Telecom network being the thread connecting the entire world ensures that most important information reaches the desired recipient in the blink of an eye. And especially in the times of crisis like that posed by Covid-19, fast communication and ready information can help save many lives. At the same time one has to take the turbulence prone dynamics of the industry into consideration. If it faces heavy losses, the very existence of the industry can become questionable and then there will be no link of communication in times like these. There is a dire need for sound support from the governments for the telecom companies which work 24*7 to ensure that the vital thread of communication doesn't break. In the current scenario, the key questions faced by the telecom companies are about ensuring the reliability of the networks, while taking care of positive customer experience, even with high pressure on the networks. They also need to anticipate the right time to make investments in their network and 5G. The telecom companies also need to reassess their cost structure to offset any mid-term revenue decline. The impending future has to be about leveraging automation across every facet of the business, be it customer, employee, network resiliency. With increased dependency on the networks data privacy frameworks need to be aligned and their affects on the company's policies have to be gauged.

CONCLUSION

Finally, the telecom administration went through an overhaul to cater to the new normal created by the pandemic. And the world once again realized that to stay connected there is dire need of telecommunication that is affordable to all strata of people and a network

that is reliable and resilient. The impact of telecom on containing the pandemic has been commendable and so is the positive impact of the pandemic on telecom growth. While the pandemic proved to be a curse for many people who lost their lives and businesses, it proved to be a testimony to the vitality of telecom in today's world. In return, telecom industry all over the world received a fresh lease of life and energy owing to the increase in revenues due to the pandemic. Since people got stuck where they were for months, the only savior as compared to the healthcare workers for businesses and for people seemed to be the telecom network.

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Marketing Challenges in New Normal

Teena¹ and Babita Jaiswal²

ABSTRACT

Since the days of yore, marketers have been trying to build a relationship between product and consumer. The means could have been varied but the result was focused on the sale. As said by Tom Peters “All business success rests on something labelled a sale, which at least momentarily weds company and customer.” But at times this was done without giving due attention to the environment and consumer’s health. Also, it was quite easier to perform all marketing mix activities that covers the aspects of product, price, place, and promotion. Even the concept of “jo dikhta hai wo bikta hai” was true to a greater extent. But with the disruption caused by the Covid pandemic, marketers have been forced to pay attention to the dramatic change in consumer behavior. With global lockdowns for extended periods that have made people stay indoors, the home has become the new playground for marketers. Being Global is now accompanied by Being local. With a rise in focus on environmental and health factors, consumers are being driven by varied factors which are making a marketer’s job more challenging and dynamic. This paper provides a study on the impact of the covid-19 pandemic on marketing. In this paper, we would focus on how the COVID pandemic has put forwarded challenges in the marketing activities of different sectors and the change in marketing concept that has occurred. With this, the study also focuses on some of the marketing strategies adopted by different economic sectors to cope with the pandemic introduced challenges. Discussion is provided at the end of the study for converting these challenges into opportunities.

Keywords: Marketing Challenges, Covid 19, Lockdown, Vaccination, Consumer, Strategies

INTRODUCTION

With the massive loss of several lives worldwide, one of the drastic threats of the covid-19 pandemic is the global recession. In times of self-isolation, people are getting out only for buying essential items. On one hand supply chain is interrupted and on the other hand, a major fall in consumer demand can be seen. Not a single sector of the economy remained untouched by the impact of covid-19 pandemic, the growing difficulties for marketing activities can be seen in the primary, secondary, and tertiary sectors. Covid 19 pandemic has forced industries to adopt a change in the way of doing business. Although the vaccination process is continuing as per the data available 15,15,12,69,20 citizens of the Indian population is vaccinated till January, 2022 and still not a big number as compared to the total population of the country. The consumer is giving preference to the brands following health and hygiene norms and the producer is also paying attention toward green marketing and digital marketing. For the

sake of caring for employees and consumers the need for Work from Home, going digital in all ways and paying attention towards hygiene has arisen. Personal selling and door-to-door selling have also shifted to online selling. The marketer’s path in such a changing scenario is full of challenges and difficulties. A combination of digital marketing along with green marketing may bring a revolutionary change.

REVIEW OF LITERATURE

The meaning of marketing which is perceived by an individual as a collection of all activities performed by a company to promote the buying or selling of goods and services does not completely fit in the present scenario and thus needs to be improved by the changing consumer behavior and priority. The marketing function has to be transformed towards more ethical behavior and business mission and values have to be revised towards more society orientation rather than focusing solely on profit maximization (Gigauri & Djakeli, 2021).

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Companies that develop new and improved products and services with environmental inputs in mind give themselves access to new markets, increase their profit sustainability, and enjoy a competitive advantage over the companies which are not concerned for the environment (Bukhari, S.S., 2011).

Changes in consumption patterns before and during Covid-19 resulted in an increase in the priority to health products, while the product experiencing the largest decline was fashion (Deliana, Y., Trimo, L., & El Hami, A. 2021).

In developing and under developing countries, the supply chain is significantly affected as a result of the absence of local or migrant workers due to sickness or travel restrictions imposed by lockdown (Aday & Aday, 2020).

Due to the imposition of lockdown a clear-cut reduction in the supply of raw material and finished products, the exchange of goods and services, the level of export-import has taken place. Companies are forced to produce the required material on their own within the local boundaries and the trend of “vocal for local” has started. Manufacturers are putting efforts into increasing sales volume by using online and offline ‘buy local’ initiatives (Hoekstra, J.C., Leeftang, P.S.H., 2020).

It is found in many studies that those who were using the combination of offline and online store-based marketing were more able to adapt themselves in the pandemic-imposed challenges than those who were limited to offline store-based marketing. The personalized digital communication has a significant role in increasing the brand loyalty of consumers because if a consumer is getting personalized communications from the companies, they tend to become loyal towards that company (Alshaketheep et al., 2020).

THE OBJECTIVE OF THE STUDY

1. To identify the impact of the covid-19 pandemic on marketing.
2. To identify the marketing challenges put forwarded by the covid 19 pandemic.
3. To discuss post-pandemic marketing strategies of different industries.

RESEARCH METHODOLOGY

The structure of the paper is as follows: the literature review is done on the impact of the pandemic on marketing followed by the discussion section on

marketing challenges faced and strategies adopted during lockdown and vaccination period. Secondary data is collected from articles, journals, reports, and websites.

IMPACT OF COVID-19 ON MARKETING ACTIVITIES

- **Impact on Real estate brands:** According to an article on marketing in times of covid 19: The house of Hiranandani, selling apartments when working from home during pandemic & lockdown is a challenging task for the Real estate brands. The deal of purchasing a home includes huge investment but the recession in the economy and fall in income level is a threat.
- According to an article on the role of digital marketing during the covid-19 pandemic in India, Fashion products, automobiles, and sports equipment faced a huge sale decrement whereas health and fitness products, home learning products, and internet data consumptions achieved higher sales.
- **Impact on Tourism Industry:** As per the report of the Confederation of Indian Industry, 2020

<i>Tourism Industry</i>	<i>Expected Loss in rupee</i>
Hotel industry	1.10 lakh crores
Online travel agencies	4 thousand 312 crores
Adventure tour operators	19 thousand crores
Cruise tourism	419 crores

- Because the pandemic resulted in a lockdown and an emergence of maintaining social distancing almost all the industries whether that is agri-food, meet market, automobiles, manufacturing and production, fashion market, service sector like education, transportation, hotel, defence faced a tremendous decline in the growth rate.
- According to the latest report of the Indian Insurance Industry Overview & Market Development Analysis given on July 9, 2021, the expected growth rate of Life Insurance Corporation of India will be approx. 12 to 15% because of the IRDAI approval to the insurance industry to invest in debt instruments and real estate, increase in FDI rate and union budget for the Insurance Industry, and Increment in the funding of the finance ministry.
- Covid 19 resulted in a major loss of jobs which compelled the consumer to use their savings and thus there came a sharp decline in the demand for non-

essential products. The result of this was a stoppage of new production, affected packaging, advertising, distributing, logistic management activities.

- One of the problems in front of the online food companies was how to encourage consumers to buy products during lockdown & social distancing. Along with this the covid-19 precaution that to be followed also a challenge for gaining the trust of consumers.
- Due to the norms of social distancing, those self-employed and working persons of the beauty and fashion industry were not able to sustain themselves in the market.

Marketing Challenges

As the vaccination process in India continues but as we know that India is the second-highest populated nation the vaccination is not at that much speed as it should be. In India, the third wave of covid 19 is expected to come from August, said a report of the state bank of India. This paper explains below the major post-pandemic marketing challenges:

- Digitalization is the demand of today's scenario but the Internet connectivity, bandwidth, speed is the problem to adopt a complete digital marketing structure. In India, not a high volume of the population is tech-savvy. Many Indian rural areas still do not have internet connectivity.
- The GDP rate of India fall abruptly and the country is facing a huge shortage of funds and thus there is a lack of fresh investments to install new technology.
- The customers are withdrawing their savings from banks because of the loss of jobs. This is negatively affecting the credit creation process of the banking industry and thus banks are not able to perform the lending activities.
- No demand from the consumer side is one of the major issues in front of marketers.
- The pandemic has changed the priorities of customers. They are becoming more health-conscious and thus marketers have the challenge to build trust with consumers by assuring them that consumer's health is more important than the self-benefit of the company.
- Marketers have one of the other challenges of providing transparency in their dealings with customers. The problems of adulteration are a big societal issue that needs to be focused on. The

increasing stress and depression problems are another challenge.

- The rule of recycling, reuse and reduce has gained its importance, and thus for full filling the corporate social responsibility this challenge has to be tackled now.
- Marketers have to understand the emotions of the customer. A change in mindset is required.
- The welfare of workers cannot be ignored. The challenge of skill improvement, adopting all health and safety measures, shifting to work from home way of doing the job is in front of marketers. Covid pandemic resulted in the huge loss of lives, each life matters and thus the safety of workers and their families becomes important.
- The supply chain has to be improved. Marketers need to understand that now it will not be beneficial to get dependent on a specific country or supplier for getting the raw material, semi-finished or finished product. A trend of "Vocal for local" is also getting popular.

Strategies Adopted

- According to TATA Group, the strategy of Network of Teams was adopted in the company for solving customer problems and improving efficiency. This strategy was an outcome of the challenges faced during the lockdown. New policies are being introduced for the adoption of upgraded technology, reaching customers, and increasing brand loyalty among them.
- Real estate brands are increasing focus on giving an attractive and well-formed virtual experience to potential customers which will be extremely similar to a real-life experience of site visiting.
- The emerging role of Digital marketing: Although the limitations of digital marketing cannot be ignored one can take much benefit of advantages of digital marketing. There are so many benefits of going digital. Few major advantages of digital marketing are Quick access, Time saves, no geographical boundaries, connection to a large target market, quick resolution of complaints, faster communication, 24*7 working, online payments, etc.
- Focus towards Green Marketing: It is time to keep a balance and to focus on sustainable development without harming nature. The pandemic has given us

a lesson. Marketing mix activities must be formed with giving the priorities to Environment and Consumer health. Now the producer has understood that they have to modify their mission and vision statement for gaining consumer trust and brand loyalty.

- As people are becoming health conscious there are huge opportunities for the Insurance sector to grow more by adopting a directional and improved marketing mix. According to the latest report of the Indian Insurance Industry Overview & Market Development Analysis given on July 9, 2021, the expected growth rate of Life Insurance Corporation of India will be approx. 12 to 15%.

CONCLUSION

After going through from above discussion, this paper has found that marketers have many challenges in today's competitive environment. They have to adopt a type of marketing strategy which could result in maintaining a balance between profitability and environment sustainability. The pandemic has given a lesson to producer and consumer. On one side Marketers have to understand that if they are using the environment resources than they also have a responsibility towards maintain an ecological balance. On the other side consumers are also getting aware about the importance of brands which are fulfilling their responsibility towards environment and giving priority to hygiene. The growing research in the area of green marketing also focusing on the same issues.

With this, the paper also concludes that the way of doing marketing activities should be flexible and adaptable in accordance with the changing scenario. The growing importance of digitalisation and online marketing can be seen. Social media can become a marvelous platform marketer for converting consumer interaction into

Transaction. No doubt, government support is must required to strengthen online marketing for improving internet connectivity, connecting people with online services and also formulating rules and regulations toward customer privacy and data protection. Once these limitations of digital marketing are controlled, no doubt marketers would also be able to grow along with maintaining ecological balance.

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Impact of Substandard Loans on the Performance of the Banks

Public Sector and Private Sector

Sampann Patodi¹ and Kuber Sharma²

ABSTRACT

Banking is a business of borrowing money from people and then lending to them at a premium. Lending of money in the form of short long term Advances involve credit or default risk. When the loans and advances made by banks or financial institutions turn out as non-productive, non-rewarding and non-remunerative, they become Non Performing Assets (NPA). In 2019, Indian banks with contribution of 9.23% non-performing loans as percent of all bank loans, ranked 20th position in the World Bank data. Higher the NPAs, poorer is the health of the bank. The objective of this study is to perform an analysis of NPAs of Indian Public Sector Banks and Private Sector Banks and their variation of impact on Bank's performance. The study is descriptive in nature. Secondary quantitative data from the website of RBI is collected. Further, this study also sees if there are any other variables that explain the variation in net income of the Indian banks.

Keywords: NPA, Credit, Default Risk

INTRODUCTION

Banks lend money to people in forms of loans, bonds, credits and use the money in deposit accounts to do so. Any Commercial Loan that is not complying or has previously not complied with its contractual conditions and has other credit vulnerabilities that may cause payment default or principal exposure but is not yet certain is referred to as a Substandard Loan. The profitability of a bank is a metric used to assess its performance. Banks make money when they earn or generate more money than they spend on expenses. The majority of a bank's profit comes from service fees charged for its services and interest generated on its assets. A non-performing asset (NPA) is a category for loans or advances that have defaulted or are in arrears. When principal or interest payments are late or missed, the loan is in arrears. When the lender believes the loan arrangement has been broken and the debtor is unable to satisfy his commitments, the loan is considered in default. In 2019, Indian banks with contribution of 9.23% non-performing loans as percent of all bank loans, ranked 20th position in the World Bank data.

The Reserve Bank of India has issued rules for evaluating when an asset becomes a non-performing asset (NPA).

1. If a Term Credit interest/principal instalment is due for more than ninety days, it is termed a non-performing asset (NPA).
2. If the amount of an overdraft or cash credit (OD/CC) is consistently larger than the sanctioned limit for more than ninety days, it is classified as a non-performing asset (NPA).
3. A non-performing asset is one that has late invoices that have been purchased and discounted for more than ninety days.
4. If interest/principal installments on agricultural advances are due for two harvest seasons but the period does not exceed two terms of six months due to the advance provided, it is termed a non-performing asset (NPA).
5. Any receivable sum outstanding for more than ninety days in relation to other accounts is deemed a non-performing asset (NPA).

Some of the factors that contribute to NPA are diversification of funds for purposes other than

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intended use, business decline, economic downturn, input shortage, price escalation, cost and time overruns, frequent policy changes in the government, such as excise duties. Sub-standard assets are non-performing assets that have been in service for less than two years. However, as of March 31, 2001, the guidelines for considering non-performing assets to be substandard assets have changed, and assets that have been non-performing for more than 18 months are now considered substandard assets. When assets become sub-standard, banks are unable to recover all pending receivables from customers because the current market value of the assets or the borrower's/net guarantor's worth is insufficient. In the event of substandard assets, a 10% provision of the total outstanding amount must be made.

LITERATURE REVIEW

NPA is a critical factor which has adversely impacted the financial sector in India. Dr. Ritu Wadhwa in *Impact of NPA on Profitability of Banks* (2020) has established that NPAs affect the flow of credit which in turn affect the development and growth of the economy. The research showed that the public banks had higher NPA compared to private banks. The research also showed that NPA alone cannot be a measure for deciding/analyzing the health of a bank. Srirang K Jha - *Impact of Non-Performing Assets on Profitability: A Study of Selected Private and Public Sector Banks in India* (2020). A comparative scrutiny of HDFC Bank (leading private bank) and SBI (leading public bank) reveals that the extent of provisions for NPA is much more in case of SBI than that of HDFC Bank which indicates that the NPA would also be greater in case of SBI as provisions are directly influenced by the quality and quantity of NPAs that the bank is suffering through. The extent of impact of provisions for NPA on net profit is more in case of SBI as its quantity is high which is acting as a roadblock in earning more profits. The HDFC Bank is comparatively less affected and banks have also more diversified sources of income than that of SBI. The banking industry of every nation plays an important role in the economic development of that country and if a country is in a developing position like India, it becomes more important. Banks collect deposits from their customers and these collected deposited funds provided to the defects units in the form of loans. The success of any bank is hugely dependent on how efficiently a bank collects its funds and manages its loans so the loan management performance is very important for every bank. Dr. Raj Kumar Thatera in *Impact of Non-*

Performing Assets (NPAs) on Assets Turnover Ratios of Punjab National Bank Limited (2019) also interpreted that a sudden increase and decrease in the data can be explained by the NPAs. It also affects the total income, assets composition of the bank and turnover of the bank on its assets. The Indian Banking Sector is mainly dominated by the Public Sector Banks. Globalization has encouraged multinationals and foreign banks to set up their business units in India. The study, *Effect of NPA on Banks Profitability* (2017) by Sri Ayan Charaborty indicated that the selected Commercial Bank is different in terms of total assets, Gross and Net NPAs, Advances and efficiency factors. Differences exist in their mean value of Return on Assets, Gross NPA/Total Assets, Net NPA/Total Assets & Net NPA to Advances. Profitability ratios are employed by the management in order to assess how efficiently they carry on their business operations and also it is suggested for the entire bank to take effective steps to improve the operating efficiency. NPAs affect the financial performance of Indian banks as well as financial growth of the economy. The Indian banking system is facing the NPAs problem. Every country's economic growth depends upon their financial system. The financial system mainly comprises the banking sector. Especially public sector banks should focus on their NPA Management to grow their profitability. The financial institutions should develop new strategies planning to improve the recovery of loans. Non-performing assets (NPAs) are affecting the performance of financial institutions both financially and psychologically. The non-performing assets have become a major cause of concern. Absorbing the credit management skills has become all the more important for improving the bottom-line of the banking sector. The current NPAs status continues to disturb the Indian banking Sector. Several experiments have been tried to reduce NPAs but nothing has hit the mark in tackling NPAs. The Indian banking sector faced a serious problem of NPAs. A high level of NPAs suggests a high probability of a large number of credit defaults that affect the profitability and liquidity of banks. Most of the problems related to NPA are faced by public sector banks. To improve the efficiency and profitability, the NPAs have to be scheduled. Strict measures are needed to be taken up to combat these NPAs crises. It is highly impossible to have zero percent NPAs.

In this study we will find the impact of the substandard loans on the performance of the bank for the past 16 years: 2005–2020. The performance in the banks is measured in terms of profitability and liquidity of the

banks which is depicted by the Net Income. We will see how much variation can be explained by the NPAs in the net income of the Indian banks: Public Sector and Private Sector. Are these numbers the same for both of them or different? If different, we will also explore what other variables could explain the variation in all together.

OBJECTIVE

- To review existing literature on the relationship between substandard loans and profitability of the company.
- To study the impact of substandard loans(NPA) on the performance of the banks: Public Sector Banks, Private Sector Banks.

HYPOTHESIS

- **Null Hypothesis (H0):** There is no significant impact of Substandard loans (NPA) on the performance (profitability-Net Income) of the Indian banks.
- **Alternate Hypothesis (H1):** There is a significant impact of substandard loans (NPA) on the performance (Net Income) of the Indian banks.

RESEARCH METHODOLOGY

- **Type of research design:** The study is exploratory in nature. Objective of exploratory research – To gain familiarity with the phenomenon or to achieve new insights into it. Exploratory research is also known as formulative research.
- **Method of data collection:** The data used here for research is a secondary data type which has been taken from the official website of Reserve Bank of India (RBI).
- **Variables studied and their detailed definition:** The variables taken for the study are Public Sector Banks NPA, Private Sector Banks NPA, Net NPAs and Public Sector Banks Net Income, Private Sector Banks Net Income, Net Income respectively. Additionally Interest Income and Non-Interest Income have also been taken to explore the variation in the Net Income. Here in this paper Net Income is a dependent variable and NPAs are independent variables.
- **Statistical tools used:** For performing analysis, we have used an SPSS tool. In data analysis we have covered inferential analysis. As a part of inferential analysis we have done regression testing.

DATA ANALYSIS AND INTERPRETATION

Objective 1: To review existing literature on the relationship between substandard loans and profitability of the company.

From the existing literature a significant relationship has been found in the profitability and performance of the banks or any organization. Bad loans affect the profitability of the bank. Non performing assets are the key factor in the bad loans. The research paper.

“Impact of NPA on Profitability of Banks” showed that NPA alone cannot be the measure for deciding/analyzing the health of the company. Another paper, “Impact of Non-Performing Assets on Profitability: A study of Selected Private and Public Sector Banks in India” showed that the extent of NPA in government banks is so high that if it’s provisioning is removed from the net loss, the loss gets turned into profits. Several other studies have been conducted to see the impact; some comparative while other general. It can also be seen that the asset turnover ratio is also impacted by NPA. A sudden increase or decrease in the study period can be seen by NPAs. A lot of work has been done on this topic. Some of them are : “A study on the impact of Credit Risk on the profitability of State Bank of India”, “Financial performance of Private Commercial Banks in India: Multiple Regression Analysis”, “Loan default rate and its impact on Profitability”.

Objective 2: To study the impact of Substandard loans (NPA) on the performance of the banks: Public Sector banks, Private Sector Banks

List of Public Sector Banks and Private Sector Banks is shown in Table 1 for understanding the further data analysis and interpretation. The data has been taken for the period of 16 years: 2005-2020.

Table 1: List of Banks

S. No.	Public Sector Banks	S. No.	Private Sector Banks
1	Allahabad Bank	1	Axis Bank Ltd.
2	Andhra Bank	2	Bandhan Bank Ltd.
3	Bank of Baroda	3	City Union Bank Ltd.
4	Bank of India	4	CSB Bank Ltd.
5	Bank of Maharashtra	5	DCB Bank Ltd.
6	Canara Bank	6	Federal Bank Ltd.
7	Central Bank of India	7	HDFC Bank Ltd.
8	Corporation Bank	8	ICICI Bank Ltd.
9	Indian Bank	9	IDBI Bank Ltd.

S. No.	Public Sector Banks	S. No.	Private Sector Banks
10	Indian Overseas Bank	10	IDFC First Bank Ltd.
11	Oriental Bank of Commerce	11	IndusInd Bank Ltd.
12	Punjab and Sind Bank	12	Jammu and Kashmir Bank Ltd.
13	Punjab National Bank	13	Karnataka Bank Ltd.
14	State Bank of India	14	Karur Vysya Bank Ltd.
15	Syndicate Bank	15	Kotak Mahindra Bank Ltd.
16	Uco Bank	16	Lakshmi Vilas Bank Ltd.
17	Union Bank of India	17	nainital Bank Ltd.
18	United Bank of India	18	RBI Bank Ltd.
		19	South Indian Bank Ltd.
		20	Tamilnad Mercantile Bank Ltd.
		21	The Dhanalakshmi Bank Ltd.
		22	Yes Bank Ltd.

To understand the impact of Substandard loans on the performance of the banks, we have taken profitability as a measure of performance which is further seen by Net Income. NPAs are the measure of Substandard loans. Gross NPA refers to the sum of all the loans that have been defaulted by the borrowers within the provided period while Net NPA is the amount that results after deducting provision for unpaid debts from gross NPA.

Public Sector Banks

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.813 ^a	.662	.637	24738.6710	.662	27.367	1	14	.000

a. Predictors: (Constant), PSB_NPA; b. Dependent Variable: PSB_NI

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.675E10	1	1.675E10	27.367	.000 ^a
Residual	8.568E9	14	6.120E8		
Total	2.532E10	15			

a. Predictors: (Constant), PSB_NPA; b. Dependent Variable: PSB_NI

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	42290.797	8699.786			4.861	.000
	PSB_NPA	-0.226	.043	-0.813		-5.231	.000

a. Dependent Variable: PSB_NI

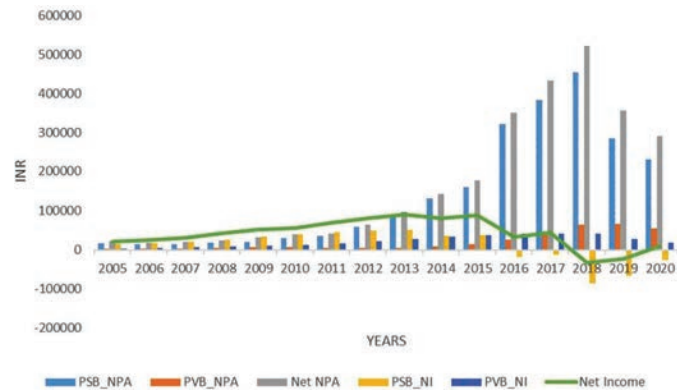


Figure 1: Clustered Column-line Combination chart of NPAs and Net Income.

Here: PSB_NPA, PVB_NPA, PSB_NI, PVB_NI symbolizes NPA of Public Sector Banks, NPA of Private Sector Banks, Net Income of Public Sector banks, Net Income of Private Sector Banks respectively. Net NPA and Net Income are for that particular year (inclusive of Foreign banks, Small Finance banks).

INFERENTIAL DATA ANALYSIS

Regression Testing

Hypothesis

- H0: There is no significant impact of Substandard loans (NetNPA) on Net Income (profitability leading to performance) of the Indian banks.
- H1: There is a significant impact of Substandard loans (Net NPA) on Net Income (profitability leading to performance) of the banks.

Private Sector BanksModel Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.546 ^a	.298	.248	12102.40543	.298	5.954	1	14	.000

a. Predictors: (Constant), PVB_NPA; b. Dependent Variable: PVB_NI

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.721E8	1	8.7217E8	5.954	.029 ^a
	Residual	2.051E9	14	1.465E8		
	Total	2.923E9	15			

a. Predictors: (Constant), PVB_NPA; b. Dependent Variable: PVB_NI

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16019.169	4067.136		3.939	.001
	PVB_NPA	.321	.132	.546	2.440	.029

a. Dependent Variable: PVB_NI

OVERALL (Combined Banks Data)Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.543 ^a	.295	.244	3.21996072E4	.295	5.849	1	14	.030

a. Predictors: (Constant), NET NPA; b. Dependent Variable: NET INCOME

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.064E9	1	6.064E9	5.849	.030 ^a
	Residual	1.452E10	14	1.037E9		
	Total	2.058E10	15			

a. Predictors: (Constant), NET NPA; b. Dependent Variable: NET INCOME

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	61718.1657	11391.911		5.418	.000
	NET NPA	-0.119	.049	-0.543	-2.418	.030

a. Dependent Variable: NET INCOME

Model Summary

R square value is .662 , .298 and .295 for the Public sector , private Sector and Overall Banks respectively . It says that 66.2% of the net income of public sector banks can be explained by theirNPAs while it is 29.8% of private sector banks and only 29.5% of variation in net income can be explained by the net NPAs in general . The rest 33.8% , 70.2% and 70.5% left are(have to be)

explained by other variables. The result clearly shows that Net Income of banks(inclusive of different: Public , Private, Foreign and Small Finance) behave differently when taken together. NPAs majorly affect the net income in the Public Sector but the story turns different for Private Sector Banks.

ANNOVA

The confidence interval is 95%, $\alpha=0.05$. Degree of freedom is 1 for all the years ($n-1$ where n = constant and Net NPA). The significance value is 0.000 (<0.05) for all the categories; thus rejecting the null hypothesis. Even though the data is significant, variation that can be explained by NPA alone is quite low. There must be some other variables too that explain the variation in Net Income and make the model more fit for the analysis.

Coefficients Table

The confidence interval is 95%, $\alpha = 0.05$. Significance is 0.000 (< 0.05); rejecting Null Hypothesis.

Beta values are -0.813 , 0.546 and -0.543 for the public, private and overall Indian banks respectively. The equation ($y = \text{constant} + *x$) thus becomes:

For Public Sector Banks, $PSB_NI = 42290.797 + (-0.813) * PSB_NPA$
For Private Sector Banks, $PVB_NI = 16019.169 + 0.546 * PVB_NPA$
For Indian Banks, $NI = 61718.165 + (-0.543) * NET_NPA$;

where NI is Net Income and 42290.797, 16019.169 , 61718.165 are the constants.

The result is not satisfactory and does not explain the majority of the variation in net income. Further, we explored other variables to make our model more suitable and fit and that explains variation in Net Income.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.970 ^a	.941	.911	1.09924119E4	.941	31.833	3	6	.000

a. Predictors: (Constant), Non_Interest_Income, Interest_Income, NET_NPA; b. Dependent Variable: NET_INCOME

ANNOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.154E10	3	3.847E9	31.833	.000 ^a
	Residual	7.250E8	6	1.208E8		
	Total	1.226E10	10			

a. Predictors: (Constant), Non_Interest_Income, Interest_Income, NET_NPA; b. Dependent Variable: NET_INCOME

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-77833.961	30169.351		-2.580	.042
	NET NPA	-.644	.099	-3.133	-6.498	.001
Interest_Income		13.150	3.253	.859	4.042	.007
Non_Interest_Income		134.199	39.955	1.652	3.359	.015

a. Dependent Variable: NET_INCOME

Interest Income and Non Interest Income are the variables that are taken in addition to Net NPA to see if they can explain the variation in Net Income of the Indian Banks. To our surprise these three variables together explain 94.1% of variation in Net Income of the Indian Banks for the time period 2009-2018 (RBI data). The result is significant and now the equation of the regression model becomes:

$$Y = \text{constant} + 1 * X1 + 2 * X2 + 3 * X3$$

Where, Y = Net income, X1 = Net NPA, X2 = Interest Income, X3 = Non-interest income and 1, 2, 3 are the coefficients of respective X

Net Income = $-77833.961 + (-3.133) * \text{Net NPA} + 0.859 * \text{Interest Income} + 1.652 * \text{Non Interest Income}$

RESULTS AND CONCLUSION

Our model explains the 94.1% variation in net income of Indian Banks. We first analyzed the impact of NPA solely on the net income of the Indian Banks. It was only 29.5%. Not fit. Further, to explain the rest 70.5% of Net Income of Indian Banks we took Interest Income and Non-Interest Income in addition. Multiple regression model with 3 variables: Net NPA, Interest Income and Non-Interest Income has been built that explains 94.1%

of variation(R square) in Net Income(performance) of Indian Banks for the time period 2005-2020.

FUTURE RESEARCH

The future research can take more variables into consideration to try and explain may be 99% of variation in Net Income of the banks in India. It can also try to explain what are the variables that are responsible for the performance of Private banks as NPA impact is very less in Private banks as compared to Public banks in India.

ACKNOWLEDGEMENTS

We hereby declare that the paper titled “Impact of Substandard Loans on the Performance of the Banks: Public Sector and Private Sector” is our original work and has not been published anywhere.

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Building Human Resilience: Covid-19

An Opportunity to Prepare and Fight Future Pandemics

Rameesha Kalra, Surekha Nayak and Manu K.S.¹

ABSTRACT

Covid-19 is neither the first pandemic nor will be the last pandemic that has impacted the globe. The frequency of pandemics has increased and it is increasingly becoming difficult to contain them due to population growth, social trends, economic constraints, lack of education and so on. Human beings have to build resilience in order to cope up with such adverse circumstances. Resilience helps human beings to respond and thrive in the times of misfortune. Resilience is not something that can be built in a day; it takes time to build resilience over time. Each industry has to individually and collectively should start taking steps as of today towards building resilience of future. This includes strategies, policies at all levels i.e. Gram Panchayat level to National level. Pandemic Management and ensuring business sustainability in an uncertain environment should be part of every Government planning program. The rapid spread of Corona virus has caused disruption to billions of lives and thus the traditional ways of doing business and services have usurped. This paper discusses ways to build human resilience in order to tackle future pandemics. The paper also offers useful suggestions to the Government and policy makers in building human and community resilience in order to fight pandemics in future.

Keywords: Covid-19, Pandemic, Resilience, Pandemic Management, Business Sustainability

INTRODUCTION

Covid-19 has thrown our life out of gear. It is not the first pandemic nor will it be the last pandemic that has impacted the globe. Humans have been hit hard in the past but the frequency of pandemics has increased and it is increasingly becoming difficult to contain them due to population growth, social trends, economic constraints, lack of education and so on. Since there is no sure shot way of predicting next pandemic and its effects and certainly no way of stopping them from happening again – our only way forward is to deal with them, prepare in advance and build resilience against future pandemics. Let's begin by defining 'Resilience', Cambridge English Dictionary explains Resilience as the 'ability to be happy, successful again after something bad or difficult has happened.' Luthans et al., 2006 defines resilience as the developable capacity to rebound from adversity. Pretty self explanatory and exactly what we need especially now more than ever.

Resilience is considered important not only for mental wellbeing but also acts as a reservoir of strength to move forward. Developing resilience is a complex phenomenon, it takes time, requires efforts and support of near and dear ones. It isn't something that is inbuilt in a person, but can be built by changing one's thoughts, attitudes, behaviours and regulating emotions. Every individual is different; some individuals may feel sad, depressed and lonely following a traumatic event while others may have a balanced and mature way of handling such losses. There is no universal way of building resilience for all however there are certain best practices that we all can adopt to move towards a stronger society. The authors have proposed a 4-S framework for building resilience at – individual level, community level and work place level.

RESILIENCE AT INDIVIDUAL LEVEL

Several researches have proved that individuals who have high resilience are better in terms of psychological

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well-functioning too. Components of psychological well-functioning include positive attitude, personal competence, optimistic, problem solving skills, cohesiveness, positive relationship among family members and friends. Thompson et al. (2011) suggest that a mindful and accepting orientation toward experience may promote psychological resilience following trauma. Individuals with high levels of resilience are reported to have better coping skills and lower levels of stress and anxiety. The 4-S framework proposed for building/developing individual resilience as proposed by the authors are: Self-control, Strength (physical and mental), social relationships, self-reliance.

Self-control

As per Greek philosophy, Stoicism, Humans can't control anything—except their own happiness. It means we have no control on what is happening around us but we do have absolute control on how we choose to react to it. We can't imagine a better time to inculcate this in our thought process than today as we fight with this invisible enemy. We can be sad, depressed, angry about the whole situation or be courageous, supportive and motivated to fight against it together but we want to stress that CHOICE is ours. To get better in self-control, we all need to make a clear distinction in what is under our control and what isn't and once we identify that we make a clear choice of positively reacting to the given situation. Doing this moment to moment, will help build muscle memory and we'll keep getting better at it. Few other strategies that are suggested to develop self-control are: time management, stress management, strong will power, establishing SMART goals.

Strength (Physical and Mental)

We all have heard a sound mind is in a sound body. When we talk about individual resilience, healthy mind and healthy body both are required. Exercising regularly, eating a healthy diet, focusing on a balanced lifestyle, adequate and proper sleep cycle and practicing yoga/meditation are the prerequisites of a healthy body and mind.

Social Relationships

Positive social interactions/relationships are a key to resilience. Research has proved that people who have good social bonding are tied to a greater psychological and physical well being. Love, trust, support help bolster an individual's resilience. Important tips to develop social connection are to accept and respect each others'

differences, patient listening skills and empathetic attitude towards each other.

Self-reliance

Ensuring that an individual isn't dependent upon others for his/her resources and needs are important for self-confidence and inner happiness. A person should plan his financial resources in such a way that the dependence upon others is least. Also in terms of building emotional resilience, giving time to self and engaging in self-care is considered as a key.

RESILIENCE AT COMMUNITY LEVEL

When we talk about community resilience, it is the sustained ability of the community as a whole to respond/withstand adverse situations. An individual's ability to strive through tough times is not enough unless the entire community together acts as a team and withstand the tough situation. Thus, when we talk about community, it includes not only people but also place, relationships, cultural patterns and its socio-economic structure. The 4-S framework proposed for building/developing community resilience as proposed by the authors is: Self reliance, strengthening infrastructure and health facilities, social cohesion, spending resources judiciously.

Self-reliance

Building self-reliance in community implies less dependence upon imports and more of self-reliant in terms of producing/manufacturing products which would also support our 'Make in India' initiative. If the community assets are leveraged to the optimum manner, we would be less vulnerable to hazards/difficult situations. One of the very good examples of self-resilience in our nations context is how we have started producing our own N-95 masks and producing PPE kits which we never used to do earlier. We need to continue to explore and invest in such areas. These measures will certainly prepare us better in terms of self reliance.

Strengthening Infrastructure and Health Facilities

When we think of infrastructure development, the first thing that comes to mind is infrastructure planning in such a way that it can withstand adverse weather/climatic calamities. Safe and secure infrastructure differentiates between developed and under developed economies. Also, infrastructure includes availability of

basic resources like power, transport, communication, water to its community members. Needles to say a strong health/medical infrastructure, especially during pandemic times acts as a life saviour. India has been able to identify and manage its health infrastructure efficiently during Covid-19 until now however there is a glaring gap between our facilities and those of developed nations. We, as a nation need to work tirelessly in this area so that we do not loose lives in the future pandemics due to lack of good health care system even in the remotest of regions of our country.

Social Cohesion

India has come together to support and cooperate with each other to survive and prosper during this time of pandemic. Community workers, health officials, citizens have been working tirelessly to support each other during these tough times which indicates that the country is cohesive in terms of its social relationships. However, we have also seen sporadic instances of violence against our front line workers which shows that there is a strong need to work in this area. Building trust among different communities take times and these measures needs to be continuous. By supporting each other, we can not only soften the pandemic's effect but also revive its growth.

Spending Resources Judiciously

Spending scarce resources wisely is a key to build strong community resilience. One should be conservative in spending community resources to be better prepared for unanticipated circumstances like the one prevailing now. Initiatives like opening up 'mohalla clinics' and focus on government schools, by the Delhi government is prime example of good utilization of public funds for better services to the community. We need to keep exploring such options at all levels and emulate the successful one's where ever feasible.

RESILIENCE AT WORKPLACE LEVEL

Occupational stress is a universal phenomenon that is associated with several deleterious consequences such as negative physical and mental health outcomes (Kakiashvili et al., 2013). As per articles by Figley, 2002; Bride et al., 2007, the experience of occupational stress has been consistently linked to negative individual outcomes such as high rates of depression and anxiety, burnout, secondary traumatic stress, and compassion fatigue. Workplace stress has serious implications upon the productivity of an

employee and their psychological functioning. The 4-S framework proposed for building/developing workplace resilience as proposed by the authors is: Strategic alignment, supportive work culture, stress management, Safe and secure environment.

Strategic Alignment

Building Resilience at workplace needs to be a part of a company/institutions strategy and not an afterthought. Robust Business continuity plans needs to be developed and put in place for all the work force. Major Tech companies are leading the way in this area. For e.g. TCS took a decision to have 75% of their workforce work from home in next 5 years. We believe at strategic level this is very courageous and timely decision. Not every institution can do that but needless to say they need to rethink their strategies and be prepared whatever challenges future throws their way.

Supportive Work Culture

Employees need a positive work culture to thrive and be highly productive. Good working experience can help the work force to stay together and motivated during adverse times. A supportive work culture includes: developing realistic goals, positive interactions, maintaining a healthy work-life balance, learning from mistakes and fun activities/recreational activities. Occasionally providing a chance to include families in office get together also goes a long way in building trust and long term relationships among employees.

Stress Management

As we all are aware, stress at workplace is one of the major factors that impacts employee productivity and health adversely. To combat stress, few good practices one can adopt are: maintaining an adequate work-life balance, prioritize and organize work, learn to say no to distracting and non productive things in office hours, spend quality time with family and practice meditation and yoga.

Safe and Secure Environment

We live in world where we need to cope with extreme stress, our work force should have the confidence that their work place would give them the required safety and security at all times. A safe and secure work environment not only ensures a protected atmosphere like home for an employee but also encourages/motivates them to perform to the best of their ability. This can be looked at as the most fundamental and important criteria which

will decide whether your workforce will be ready to work for you in adverse times. Some of the good practices companies can adopt are: Grievance redressal cell should be in place, getting regular feedback from employees, flexible working hours, avoiding working till late, proper pick and drop facility for female employees, participative management are few ways to ensure that employees feel safe and connected to work. An employer must also ensure that the workplace is designed in such a way as to prevent work place injuries to occur.

GOVERNMENT PREPAREDNESS FOR FUTURE PANDEMICS

Covid-19 pandemic has given us an opportunity to think that if any such pandemic occurs in future, we should get to a stage, no matter what pandemic hits in future; our SOPs should be so clear that the working operations need not be shut. As of today, one wave of virus has infected more than 54 lakh people globally; needless to mention, Government/policymakers have a crucial role in ensuring that we are prepared for a better future. A few suggestions that the authors propose are:

- Establish National pandemic office to develop a framework to manage future pandemics. Develop clear blue print on actions that must be taken when country faces such adverse challenges.
- Self reliance, without much dependence upon exports and imports. This is being pushed by none other than our honourable PM, Narendra Modi. Idea is to explore ways to be self reliant at individual, village, mohalla, city, district, state and finally national level.
- Hygiene and social distancing should be made an essential part of the country's education program.
- Develop robust online infrastructure of the country. 'Digital India' current government's initiative should be given highest priority.
- Invest in medical infrastructure of the country. Provide incentives for developing virtual services in health care sector.
- National register for migrant workers. Plans and policies should be in place for easy and quick transportation of migrant workers back to their natives, interim support structure etc.
- Food industry – bring in policies to ensure highest levels of hygiene throughout the life cycle of food, from procurement to delivery.

- Online transition – This is not only for private companies. Government workforce also needs to have a contingency plan in place. Proper training programs needs to be developed for the workforce so that they can also transition to online mode of working with ease.

With above in mind we would like to conclude that it is high time that we start looking at current pandemic also as an opportunity instead of just a problem to evolve into a stronger and resilient society who can face future pandemics with ease. The move from 'forced change' to 'adjusting in the new normal' would depend upon how individuals, industries and organizations take the learning from this pandemic into their future. Adopting the best practices discussed above we can ensure that we can be resilient as an individual and as a society.

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A Study of Student Perception towards Stock Market in India *A SEM Based Approach*

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ABSTRACT

The millennial footprints in the bourses have increased post-lockdown imposed in March, 2020 and thus, their gung-ho behavior needs to be altered for promoting rational decision making. The main objective of this study is to understand the factors driving the decision making of the students while investing in the stock market and its impact on their portfolio performance by applying structured equation models. The underlying factors have been classified into behavioral finance factors and non-behavioral finance factors. The findings suggest that the portfolio performs better when the decisions are driven by non-behavioral factors. A wide gap exists for a student to become an investor. This gap can only be addressed by exposing a student to the real world with practical knowledge of the capital market.

Keywords: Student Behavior, Behavioral Factors, Non-behavioral Factors, Stock Market, Investment Decision Making, Portfolio Performance

INTRODUCTION

Novel Coronavirus has brought wounds in the life of people both mentally and financially, and if ignored then it might turn into permanent scars in the unprecedented future. The virus has a devastating impact on the stock markets of India but soon the benchmark indices revived to their pre-covid levels and are currently surging when compared to the rest of the developing nations. Several reports suggest that the investor footprints have increased tremendously after the Covid-19 hit the stock markets. It has been reported that millennials have started to invest in the stock market keeping in mind the higher returns matched with their goals. The term millennial is coined by Howe and Strauss (1991) and is referred to as the group of individuals born between 1982-2004. Among a larger pool of investors, the participation from a small segment of the group consisting of students or millennials is vital to study.

The Indian universities do not focus upon the personal financing and investment strategies in academia which

could have resulted in the bright future of students. The curriculum offered to the students of various disciplines must incorporate the ways of putting the surplus money into return-seeking avenues. Much larger, the students report that they are having insufficient money to start with investment practices and thus, are unable to taste the joy of earning high yields. There are a lot of other factors which might be inducing Gen Y to not invest at an early stage of their lives. The current study attempts to diagnose the reasons and different investment opportunities which are preferred by lads over and above the stock market investing. Millennial investing is an area that is largely untouched and needs dedicated research. The student investing behavior must manifest the underlying investment sentiments and habits which lead to investment decision making and investment performance.

This segment of the population is the future of our country and thus, their perception of the stock markets needs to be deciphered. In case, the students are risk-averse with respect to channeling their funds

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in the stock markets then it has to be detected and acted upon.

The present study focuses on the segment consisting of students rather than targeting individuals of a specific age group. The students for stock market investing can be categorized as the ones aged between 18-30 years. This is the age group wherein the individuals attain the legal age of adulthood and pursue higher education post-secondary schooling. The main objective of this study is to understand the factors driving the decision making of the students while investing in the stock market and its impact on the performance of their portfolio. The underlying factors have been classified into behavioral finance factors including prospect theory; overconfidence bias; herding behavior and non-behavioral finance factors including information search; fundamental analysis; technical analysis; economic expectations. The current work aims to compare the influence of behavioral and non-behavioral factors on the investment performance through investment decision making. Moreover, the reasons for the students who are risk-averse and prefer not to invest in the Indian bourses are also taken into consideration. The findings suggest that a student needs to grasp practical knowledge of the financial markets for becoming an investor. Further, a student considering non-behavioral factors can reap higher yields than a student relying upon behavioral factors. The rest of the paper is divided as – Review of Literature, Research Methodology, Analysis and Interpretation and lastly, Conclusion and Recommendation.

REVIEW OF LITERATURE

An extensive review of literature has been conducted to understand the drivers behind the investment decision making of the students.

A study by Sairafi, Selleby and Stahl (2008) claims that student behavior is largely associated with irrational behavior because of the inconsistency observed in their trading patterns. Hooker (2017) claims that students have made up a perception in their minds about the stock markets. It is reported that millennials are less willing to invest and enter into a riskier proposition with the available money after financial crisis 2008. Thus, it is concluded there is a need to shape up the thought process of the young generation as on an average they have better qualifications, better access to technology than their older generations.

Williams (2016) observed that student themselves know that they are lacking behind in money management skills whereas a study by Berman (2015) concluded that the students are only required to pass the examination of financial management and thus, there is no practical knowledge of the same. On the other hand, Weiss (2016) reports that it is not a smart move for the students who entirely avoid investing in the stock markets because of higher risk associated with it. Further, the researcher claims that female candidates find stock markets more confusing and hence, end up investing less than men.

Byrne and Brooks (2008) claims that millennial investing behavior is driven through behavioral biases which make their decisions less than fully rational. This is also supported by Sochi (2018) who claims that the behavior of retail investors is driven by behavioral biases. Also, Kahneman and Tversky (1979) claims that individuals react differently to the probable outcomes of losses and gains. This has been supported by Waweru et al. (2003). Fodness and Murray (1997) claims that investors seek for more information from various resources before investing in the stock market. Further, Lin (2002) concludes that information helps in reducing the risk factor while investing in the capital market. Gill et al. (2018) has reported a startling relationship between information searches, economic expectations and overconfidence bias. The researchers found that information searches and economic expectations tend to bear a negative relationship. This may be due to the fact that after collecting information properly, the economic expectations influence the decision making in a negative way. Further, overconfidence bias positively and significantly affects the decision making when information searches is considered as a mediator in the model. Lauiainen (2020) concludes that students generally invest for increasing their financial stability and prefers savings accounts and stocks as investable options.

RESEARCH METHODOLOGY

The student community is the future of our country and hence it is important to diagnose their investment traits in the capital market, if any. The COVID-19 is taken as the cut-off date because the lockdown imposed by the Government of India induced many people to try their hands on generating income from investment in capital market. The current study is aware that a student is faced with the financial constraints, however, the present

study define students as the people in the age group ranging from 18-30 years. It is believed that a person in the aforementioned age group is in the learning phase and is rational enough to take the investment decisions.

The current study aims to understand the investment instincts of the students which induce them to decide where to invest in and where not. All the underlying factors have been divided into two broad categories namely – behavioral finance and non-behavioral finance instincts so as to gauge their relation with the investment decision making. Structured questionnaire was circulated over various reliable social platforms such as LinkedIn, Facebook, WhatsApp and Telegram. A total of 232 responses were collected out of which only 156 responses were analyzed for investigating the impact of behavioral and non-behavioral instincts. The majority of the respondents belong to University of Delhi. The filter question for including a candidate for further analysis was that the respondent must have started investing in the stock market during the lockdown period (starting from Mach 24, 2020).

The present study aims to identify the factors which drives the decision making of the students while investing. Further, the research makes an attempt to find the best set of factors required by the students in order to gain maximum returns from the portfolio. Previous research works have focused upon establishing the relationship between different factors influencing decision making but a step forward needs to be undertaken to identify the factors which are really essential for the students to make profits in the stock market. This has not been studied in the previous literature and thus, the current research work tries to fill the identified research gap before it widens.

The behavioral instincts include three latent variables namely prospect theory which is based on the premise that the pain of loss is more than the joy of gain; overconfidence bias which means that a person thinks he knows everything and is superior in knowledge; and herding behavior which describes the tendency of a person to get influenced by a group. The non-behavioral instincts include four latent variables namely fundamental analysis which is based on understanding the economy, industry and company (EIC framework approach) before investing; technical analysis which is based on the premise that an investor tries to predict the future price of a stock based upon the historical trends; information awareness which means that a person tries to collect as much as information possible from various

sources before investing in the stock market; and lastly, economic expectations which try to capture the perception of a person regarding the economic changes and its impact on the stock prices.

Only 45.3% of the total respondents have started to invest in the Indian stock market during the lockdown imposed in March, 2020. On comparing it with the pre-lockdown levels, then there is a significant jump from 17.3% to 45.3%. The major reasons reported for not investing in the stock market is the lack of knowledge and information about the financial markets followed by shortage of funds. The students claimed that they were not exposed to the topics of personal finance and investment throughout their academia. The situation is grim in the educational sector as the curricula does not allow a student to learn the real world of financial market. 61.9% students agree to the fact that the education provided to them does not make them confident enough to invest in the stock market individually. Also, the youngsters are not exposed to investing environment in their houses as reported by 66.9% of the students. The students are not risk-averse as quoted by previous studies. If they are given a chance to invest provided, they have sufficient knowledge and funds then the respondents are willing to take extra risk to earn extra profit.

The collected responses were analyzed using IBM SPSS and AMOS version 23. Two structural equation models were adopted to clearly understand the impact of behavioral and non-behavioral instincts on the investment decision making and thus, investment performance. The sample adequacy is tested using Kaiser-Meyer-Olkin (KMO) and Bartlett's test which disclosed a value of 0.783. This indicates that the sample is adequate as the reported value is higher than the threshold value of 0.5.

ANALYSIS AND INTERPRETATION

The theories formulated in the previous research work are the leading principle in analyzing the impact of behavioral and non-behavioral factors on the investment decision making and investment performance. The demographics describe that 68.3% of the selected respondents are male which indicates that females are not willing to invest in the stock market. The prime study is focused upon the students and thus, the target population for the current study ranges between 18-30 years. This is the age group where majority of the people are in a learning phase and trying to increase their knowledge through some structured courses. Further,

the data represents that 76.2% of the respondents invest out of the income earned from other sources and only 22.2% of the respondents are having the salary as their principal source of income. The respondents report that the major aim of their investing in the stock market is to increase their financial stability followed by short-term goals like travelling (Lauaiainen, 2020). Moreover, stocks followed by mutual funds are the two popular investment propositions for the selected respondents.

A comparative form of analysis has been adopted taking two different categories of factors. In other words, two structural equation models have been formulated each for behavioral factors and non-behavioral factors respectively.

Model 1 – Structure Equation Model including Behavioral Factors

Three latent variables have been included in the first model pertaining to behavioral factors to check their impact on investment decision making (DM) measured by four statements namely DM1, DM2, DM3 and DM4 and investment performance (IP) measured by three statements namely IP1, IP2, and IP3. The independent variables are prospect theory (P) measured by three statements P1, P2 and P3; overconfidence bias (OB) measured by three statements OB1, OB2, and OB3; and herding behavior (HB) measured by three statements HB1, HB2, and HB3.

The obtained sample size is though adequate but low, so therefore, bootstrapping has been undertaken for 500 sample in the current work. The model anticipates that investment performance is based upon the investment decision making which in turn is influenced by prospect theory, overconfidence bias and herding behavior. The communalities of the indicators have been checked in IBM SPSS and they are well above 0.5 which indicates that all the statements used in the questionnaire helps in determining the latent variables significantly.

The latent variables have been checked for construct validity which includes convergent validity and discriminant validity. For convergent validity to hold true, average variance extracted (AVE) must be above the threshold limit of 0.5 and for divergent validity to hold true, square root of AVE must be larger than the coefficient of correlation between the latent variables (Fornell and Larcker, 1981). Further, Cronbach's α has been used for checking the reliability of the latent variables. Table 1 provides the result of validity and reliability.

Table 1: Validity and Reliability of Latent Variables (Behavioral Factors)

<i>Latent variables</i>	<i>AVE</i>	<i>Square Root of AVE</i>	<i>Cronbach's α</i>
Prospect Theory	0.543	0.737	0.715
Overconfidence Bias	0.525	0.725	0.751
Herding Behavior	0.553	0.744	0.693
Investment Decision Making	0.63	0.794	0.688
Investment Performance	0.72	0.849	0.89

Source: Author's creation

The results suggest the AVE is above 0.5 for all the latent variables thus confirming the convergent validity while square root of AVE is also above the coefficient of correlation thus affirming the discriminant validity. Further, Cronbach's α is also satisfactory and above 0.7 for majority of the variables and close to 0.7 for herding behaviour and investment decision making which is acceptable.

Maximum likelihood estimation has been employed to obtain the results for the model. Moreover, the model fit has been checked before proceeding with the structure model. Three model fits, i.e. absolute model fit, incremental model fit, and parsimonious model fit has been reported in Table 2. The previous work reports that GFI, AGFI and NFI should be more than 0.9. The obtained result is closed to 0.9 which is also acceptable. Also, CMIN/DF should be a smaller value for better model fit. All the indicators of model fit are acceptable and thus, it can be concluded that the model pertaining to behavioral factors is fit and acceptable.

Table 2: Model Fit

<i>Absolute Model Fit</i>	<i>Incremental Model Fit</i>	<i>Parsimonious Model Fit</i>
Chi Square is significant at 0.05	AGFI = 0.952	CMIN/DF = 1.347
RMSEA = 0.072	CFI = 0.934	
GFI = 0.858	TLI = 0.870	
	NFI = 0.785	

Note: GFI (goodness of fit index); AGFI (adjusted goodness of fit index); RMSEA (root mean square error of approximation); CFI (comparative fit index); TLI (Tucker-Lewis's index); NFI (normed fit index); CMIN/DF (minimum discrepancy per degree of freedom)

Discussion of Model 1 Results

The results of Model 1 suggest that the investment decision making of the students are highly influenced by prospect theory and overconfidence bias at 1% level

of significance. This may be due to the fact that majority of the students are investing using income from other sources and thus, their loss bearing capacity reduces. In other words, the pain of loss experienced by the students is more than the joy of gaining (Kahneman and Tversky, 1979). The students are not willing to ignore risk associated with a stock after gaining in the stock market. Moreover, students are reported to experience overconfidence while picking the stocks in the capital market. They believe that their self-made portfolio will fetch them abnormal returns. However, it is startling to observe that students do not follow herding behavior in the market. The possible reason is that they feel self-sufficient in picking up the stocks which ratifies the significance of overconfidence bias (Gill et al. 2014). Table 3 provides the standardized regression weights for Model 1.

It can be noted that all the indicators are significant in explaining their respective latent variables at 1% level of significance. Also, it is interesting to observe that only two out of three variables denoting the sentiments of the investors are able to influence the investment decision making. Further, the decisions made by the students significantly influence the investment performance.

Table 3: Standardized Regression Weights for Model 1

		<i>Estimate</i>	<i>P-value</i>
DM	← Prospect	0.645	0.006*
DM	← OB	0.536	0.001*
DM	← Herding	-0.14	0.484
DM	← IP	0.825	0.021**
P1	← Prospect	0.437	0.001*
P2	← Prospect	0.666	0.001*
P3	← Prospect	0.654	0.001*
OB1	← OB	0.825	0.001*
OB2	← OB	0.679	0.001*
OB3	← OB	0.659	0.001*
H1	← Herding	0.805	0.001**
H2	← Herding	0.661	0.001*
H3	← Herding	0.51	0.001*
DM1	← DM	0.529	0.001*
DM2	← DM	0.633	0.001*
DM3	← DM	0.43	0.001*
DM4	← DM	0.787	0.001*
IP3	← IP	0.929	0.001*
IP2	← IP	0.79	0.001*
IP1	← IP	0.832	0.001*

Source: Author's creation.

Note: * significant at 1% level of significance; ** significant at 5% level of significance.

Thus, it can be concluded that behavioral factors influence the decision making of the students which eventually impacts the performance of their portfolio significantly at 5% level of significance.

Figure 1 shows the structural equation model for establishing the relation between behavioral factors, decision making and investment performance. The standardized regression weights existing between the indicators and latent variables are also reported.

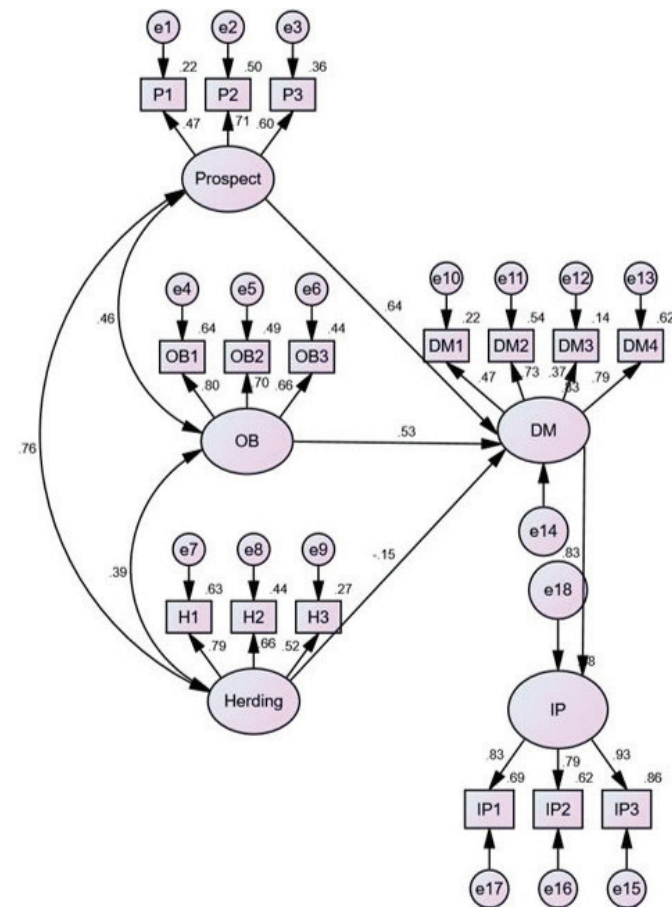


Figure 1: Structural Equation Model for Behavioral Factors

Model 2: Structure Equation Model including Non-Behavioral Factors

The second model attempts to analyze the impact of non-behavioral factors on the investment decision making (DM) measured by four statements namely DM1, DM2, DM3, and DM4 and investment performance (IP) measured by three statements namely IP1, IP2, and IP3. Four latent variables have been included in the second model. The independent variables are information awareness (IA) measured by three statements namely IA1, IA2, and IA3; fundamental analysis (FA) measured by four statements namely FA1, FA2, FA3, and FA4; technical analysis (TA) measured by two statements

namely TA1 and TA2; and lastly economic expectations (EE) measured by four statements namely EE1, EE2, EE3, and EE4. The dependent latent variables namely investment decision making and investment performance are same in Model 1 and Model 2. Same statements have been asked to the participants regarding their decisions and portfolio performance. Only the independent variables impacting these dependent variables have been classified differently. This technique helps to understand that under which model are the respondents able to make good money out of their portfolio.

The obtained sample size is though adequate but low, so therefore, bootstrapping has been undertaken for 500 sample in the current model. The model anticipates that investment performance is based upon the investment decision making which in turn is influenced by information awareness, fundamental analysis, technical analysis, and economic expectations. The communalities of the indicators have been checked in IBM SPSS and they are well above 0.5 which indicates that all the statements used in the questionnaire helps in determining the latent variables significantly.

The latent variables have been checked for construct validity which includes convergent validity and discriminant validity. For convergent validity to hold true, average variance extracted (AVE) must be above the threshold limit of 0.5 and for divergent validity to hold true, square root of AVE must be larger than the coefficient of correlation between the latent variables (Fornell and Larcker, 1981). Further, Cronbach's α has been used for checking the reliability of the latent variables. Table 4 provides the result of validity and reliability.

Table 4: Validity and Reliability of Latent Variables (Behavioral Factors)

<i>Latent Variables</i>	<i>AVE</i>	<i>Square Root of AVE</i>	<i>Cronbach's α</i>
Information Awareness	0.516	0.718	0.671
Fundamental Analysis	0.709	0.842	0.899
Technical Analysis	0.519	0.720	0.739
Economic Expectations	0.593	0.770	0.772
Investment Decision Making	0.662	0.814	0.688
Investment Performance	0.735	0.857	0.89

Source: Author's creation

The results suggest the AVE is above 0.5 for all the latent variables thus confirming the convergent validity while square root of AVE is also above the coefficient of correlation thus affirming the discriminant validity.

Further, Cronbach's α is also satisfactory and above 0.7 for majority of the variables and close to 0.7 for information awareness which is acceptable.

Maximum likelihood estimation has been employed to obtain the results for the model. Moreover, the model fit has been checked before proceeding with the structure model. Three model fits, i.e. absolute model fit, incremental model fit, and parsimonious model fit has been reported in Table 5. The previous work reports that GFI, AGFI and NFI should be more than 0.9. The obtained result is closed to 0.9 which is also acceptable. Also, CMIN/DF should be a smaller value for better model fit. Moreover, modification indices have also been performed to improve the model fit. All the indicators of model fit are acceptable and thus, it can be concluded that the model pertaining to non-behavioral factors is fit and acceptable.

Table 5: Model Fit

<i>Absolute Model Fit</i>	<i>Incremental Model Fit</i>	<i>Parsimonious Model Fit</i>
Chi-square is significant at 0.05	AGFI = 0.892	CMIN/DF = 1.487
RMSEA = 0.087	CFI = 0.813	
GFI = 0.846	TLI = 0.885	
	NFI = 0.759	

Note: GFI (goodness of fit index); AGFI (adjusted goodness of fit index); RMSEA (root mean square error of approximation); CFI (comparative fit index); TLI (Tucker-Lewis's index); NFI (normed fit index); CMIN/DF (minimum discrepancy per degree of freedom)

Discussion of Model 2 Results

The result of Table 6 depicts the standardized regression weights between different latent variables and among indicators and latent variables. It can be observed that only information awareness and technical analysis significantly influence a student's investment decision making at 5% and 10% level of significance. A student tries to gather information from various sources and makes use of historical prices to predict future prices. On the other hand, fundamental analysis and economic expectations do not significantly impact the decision making (Gill et al. 2014). Moreover, it is observed that more than 50% of the students whose responses have been recorded are not bothered to look at the area of the company in which they intend to invest. Also, almost half of the respondents are either neutral or they disagree to the statement that the economic conditions directly impact the capital market of the country.

Further, it can be noted that all the indicators are significant in explaining their respective latent variables at 1% level of significance. Also, it is interesting to observe that only two out of four variables denoting the sentiments of the investors are able to influence the investment decision making. Further, the decisions made by the students significantly influence the investment performance significantly.

Thus, it can be concluded that non-behavioral factors influence the decision making of the students which eventually impacts the performance of their portfolio significantly at 1% level of significance.

Table 6: Standardized Regression Weights for Model 2

		<i>Estimate</i>	<i>P-value</i>
DM	← IA	0.901	0.032*
DM	← FA	-0.979	0.338
DM	← EE	-0.292	0.447
DM	← TA	0.691	0.073**
DM	← IP	0.878	0.001*
IA1	← IA	0.772	0.001*
IA2	← IA	0.652	0.001*
IA3	← IA	0.499	0.001*
F1	← FA	0.607	0.001*
F2	← FA	0.876	0.001*
F3	← FA	0.897	0.001*
EE1	← EE	0.655	0.001*
EE2	← EE	0.666	0.001*
EE3	← EE	0.662	0.001*
T1	← TA	0.825	0.001*
T2	← TA	0.711	0.001*
F4	← FA	0.947	0.001*
EE4	← EE	0.737	0.001*
DM1	← DM	0.432	0.001*
DM2	← DM	0.833	0.001*
DM3	← DM	0.282	0.001*
DM4	← DM	0.627	0.001*
IP3	← IP	0.897	0.001*
IP2	← IP	0.807	0.001*
IP1	← IP	0.867	0.001*

Source: Author's creation

Note: * significant at 1% level of significance; ** significant at 5% level of significance

Figure 2 shows the structural equation model for establishing the relation between non-behavioral factors, decision making and investment performance. The standardized regression weights existing between the indicators and latent variables are also reported.

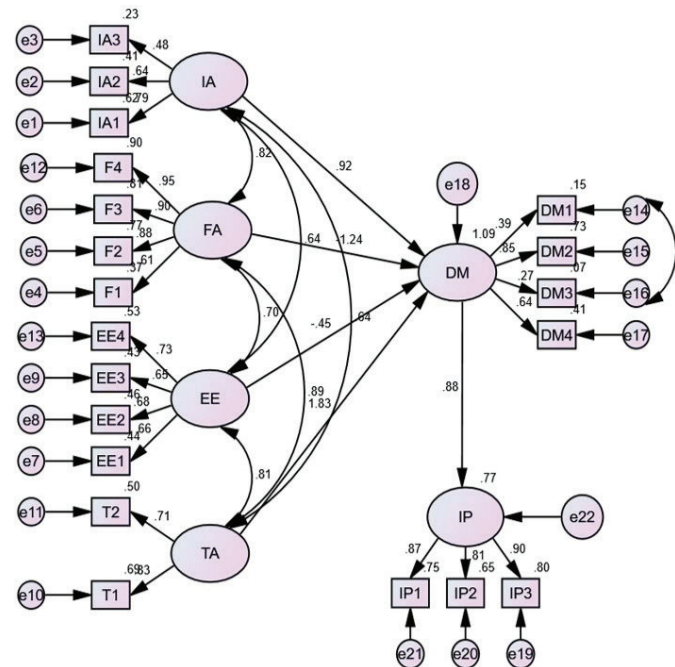


Figure 2: Structural Equation Model for Non-Behavioral Factors

CONCLUSION AND RECOMMENDATION

The basic idea of this research paper is to find out that whether the students are really becoming the investors in the stock market? In order to find the answer, we observed the impact of behavioral factors and non-behavioral factors on the investment performance through investment decision making. The results indicate that the portfolio of the students perform better when they account for non-behavioral factors in their decision making. The coefficient of regression between investment decision making and investment performance is higher in Model 2 (0.878) pertaining to non-behavioral factors as compared to Model 1 (0.825) pertaining to behavioral factors. In other words, besides non-behavioral factors, students rely heavily on the behavioral factors as well while taking decisions in the stock market. Heavy reliance on behavioral factors showcases irrational decision making in the capital market.

This clearly indicates that students must be exposed to practical knowledge besides the theoretical knowledge included in the curricula. The situation of the educational sector is grim in India as 75% of the respondents have Finance and Accounting as their specialization, 50% of the students have studied personal finance and investment topics throughout their education but still the respondents believe that not enough education in the right direction has been provided to them.

We also observed that the number of student male investors is more than the student female investors. The possible reason behind the mismatch in the investors sex ratio could be that females are risk averse than males and hence, they try to invest their funds in secured investable options. It can be concluded that the 'student behavior' can be described as an irrational behavior as it is characterized by overconfidence and risk-averse traits (Sairafi, Selleby and Stahl, 2008). Besides the theoretical knowledge, dedicated subjects in disseminating the practical knowledge of personal finance and investment topics are also required for real investment purposes. The students aged 18-30 years are not actually becoming the investors as proper investment analysis is missing on their part. Mere buying and selling in the stock market do not make a person an investor. Investment in the stock market is much wider in scope than just buying and selling of the stocks. For becoming a real investor, a person needs to understand the economic scenario of the interested country and how the stock market reacts to a particular event. Therefore, an investor must be capable of navigating the rougher periods and altering their investment decisions accordingly.

Recommendations

The stock market may be defined as the future of a country. Therefore, the young generation must be financially literate and should possess adequate skills and knowledge to grab the opportunity of investing in the capital market. The curriculum of various colleges must thrive to include subjects which disseminate practical working knowledge of the capital market. Also, the higher educational institutions must organize industrial visits, demo regarding how to select stocks in the bourses. The societies in a college can play a significant role in enhancing the skills of a student. A reality check must be given to a student apart from the theoretical knowledge.

There is a mismatch between the generation beliefs and the philosophy of the stock market (Winograd and Hais, 2014; Baker and Nofsinger, 2002). The thoughts and perceptions of the students about investing needs to be altered before it gets accrued up till the time when there is no scope for modification in their behavior. It is thus, important to modify the thought process of the millennials so as to enhance the habits and opinions of the students.

Limitations and Scope for Future Research Work

There exist a lot of untapped opportunities despite of conducting a comprehensive work in the selected research area.

1. The present work considers only three factors in the behavioral and four factors in the non-behavioral forces driving the decision making of the students. Future research work can focus upon more factors which comprehensively describe the different class of factors.
2. The questionnaire has been floated largely among the students belonging to University of Delhi. The future research can widen the target population and may thrive to include students from different universities. There is a high chance that other Indian universities apart from University of Delhi incorporates a detailed course on personal financing.

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Book Review

Title : The Monk Who Sold His Ferrari

Author : Robin Sharma

Publisher : Harper Collins

Edition : 25th Anniversary

ISBN : 978-1443461764

Robin Sharma is one of the world's premier speakers on Leadership. He has been recently named among one of the world's top leadership gurus. Mr. Sharma has the rare ability to astonish the audience with exceptionally and useful insights that lead to individuals doing their best work, teams providing superb results and organizations becoming unbeatable. For nearly 20 years, many of the most well-known organizations like Nike, GE, Microsoft, FedEx, PwC, HP and Oracle to NASA, Yale University and YPO have chosen Robin Sharma for their most important events.

Mr. Sharma's other books such as 'The Leader Who Had No Title', *'The 5 AM Club'*, *'The Greatness Guide'* and *'Who Will Cry When You Die?'* have topped bestseller lists internationally and his social media posts reach over six hundred million people a year, making him a true global phenomenon for helping people do brilliant work, thrive amid change and realize their highest leadership capacities within the organization so that personal responsibility, productivity, ingenuity and mastery soars.

'The Monk Who Sold His Ferrari': is an interesting book. After reading this book one will give some thought to life, goals, dreams and daily habits which help to reach desired dreams. The book fills with a combination of useful life strategies.

The book takes the form of a fable about Julian Mantle, a high-profile attorney with a crazy schedule and a set of priorities that center around money, power and prestige. Mantle represents the values of our society. The story is told from the perspective of one of his associates, who admires Mantle's great success

and aspires to be like him. But when Mantle has a heart attack, he drops out of the game and disappears. He sells all his possessions and goes to India to seek a more meaningful existence. When he comes back, he's a changed man. Really, it's as if he's a completely different person. He's learned from some mythical Himalayan gurus who give him mystical and yet practical advice, which he shares with his former associate.

The core of the book is the seven virtues of enlightened learning, which Mantle reveals one by one. Now, although the book presents them as actual Virtues learned from Himalayan gurus, it's important to remember as reader read that these are made up by the author — actually, he pulled them from other sources and put them together. These seven virtues are: **master one's mind, follow one's purpose, practice kaizen, live with discipline, respect time, selflessly serve others and embrace the present.**

Each of these Virtues is discussed in some detail in separate chapters, each of them with a number of concepts and habits to develop. Most of them are very inspiring and potentially very useful. After reading the book, reader incorporated several of them into his life, including the ones that involve positive thinking, visualizing goals and more. Again, these are not new concepts, and have been discussed in many other books, but the book presents a great collection of useful concepts that everyone might want to try out.

The readers will enjoy a lot and they would highly be inspired by it. Reviewer gave this book a must read recommendation for anyone who is interested in

incorporating routines and habits that can transform their lives, help them achieve their dreams, calm them and make them more happy. Yes, it's a jumble of too

many ideas, but you can pick and choose, and the ideas contained within are potentially very powerful. Plus, it's a fun and easy read.

Reviewed by Dr. Somveer
Faculty, Department of Management
Gurugram University, Gurugram



GURUGRAM UNIVERSITY BUSINESS REVIEW (GUBR)

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(Jan–June 2022, Volume 2, Issue 1)

Gurugram University Business Review (GUBR) seeks original and innovative theoretical, methodological and empirical research related to various facets of business in a global context. Papers with trans-disciplinary perspective are encouraged. Contributions in diverse fields of management and business in a global context covering (but not limited to) the following disciplines are invited:

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- Business Strategies Post-Covid period
- AI & ML in Business
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- Economics and Business Economics
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- Corporate Governance
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3. A final paper which would exceed 6000 words or occupy more than 15 pages of the Journal may be returned for abridgement.
4. The text of the paper should include title, abstract, keywords, text, references & notes, tables, figure captions, figures, but not the names of authors, their biographical notes or any acknowledgements. Author needs to submit a separate file containing the title of the paper, plus the names affiliation and complete addresses, e-mail and contact number of author(s), and an abstract, keywords, and any acknowledgements.

5. Author(s) name(s) is/are not to be included in the document/file properties.
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B. Title, Abstract, Keywords, Addresses, Biographical Notes

1. Title: as short as possible.
2. Authors Affiliation Details and Address: Author Name and Position, department, name of institution, full postal address and email address for each author.
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1. **Content:** All authors must declare they have read and agreed to the content of the submitted manuscript.
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basic principles of scholar writing and cannot be tolerated. Examples of plagiarism include:

- (a) Word-for-word copying of portions of another's writing without enclosing the copied passage in quotation marks and acknowledging the source in the appropriate scholarly convention.
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2. Paragraph

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- 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
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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

F. Address for Correspondence

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Department of Management

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invite you to

Joint International Conference on Global Challenges: Collaborations, Ethics & Resilience (ICGCER 2022)

December 13-14, 2022

Venue : Gurugram University, Sector-51, Mayfield Garden, Gurugram, Haryana, India

About the Organisers

ICGCER-2022

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. Gurugram University offers a unique and inspirational academic model designed to match the international standards. A wide spectrum of programs is paired with flexibility, experiential learning, and interdisciplinary orientation. The University has a dynamic academic fraternity drawn from top universities nationally and internationally. The event has been conceptualized by the Department of Management. The Department is the epitome of excellence and has created dynamic industry leaders and aspires to develop into a destination of choice for future managers. Department attracts a great diversity of students who have the drive, confidence, and a burning desire to advance the progress for business and society. Students here get the platform to train themselves with a view to face the challenges of the corporate world with confidence. Special emphasis is given to their holistic development through a healthy and collaborative learning environment. An integrated approach that combines field work, case studies, presentations and group discussions is followed by the department to inculcate pedagogical and conceptual knowledge along with practical exposure of management concepts and theories in students.

Valparaiso University or Valpo is located an hour outside of Chicago. 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. Additionally, Forbes and the Princeton review rank Valpo among the country's top colleges. The University enrolls students from over 50 countries. College of Business (COB) of Valparaiso University, the Co-host of the conference, 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. 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%.

About the Conference

Global Challenges: Collaborations, Ethics & Resilience (ICGCER-2022) represents a broad theme which encompasses various sub-themes of contemporary interest. The rapid global spread of COVID-19 has quickly eclipsed other recent epidemics in both size and scope. In addition to the deadly human toll and the disruption to millions of people's lives, the economic damage is already significant and far-reaching. International collaborations have always been important in the times of disruptions. Since the days of traders bringing spices from the East to Europe, people have been taking advantage of resources from other parts of the world in order to do business. In the digital age, we have another global resource readily available on a click of a button. Collaborations across organizational and cultural boundaries extend the possibilities of discovery. International collaborative projects often provide findings beyond what one team could achieve alone. Global Collaborations will be fruitful if embedded with ethics and resilience. Creating an ethically resilient environment requires an organisation - wide commitment that starts at the top and recognition that being truly ethical sometimes requires going beyond mere compliance.

Against this backdrop, a two-day International Conference 'Global Challenges: Collaborations, Ethics & Resilience (ICGCER-2022)' is being organized by the Department of Management. The conference aims to deliberate, discuss and conduct research around the prevalent issues on global challenges and prospects regarding global Collaborations, ethics and resilience. The conference strives to provide a platform for academicians, research scholars, practitioners, government officials and students to contribute their research papers and case studies in this Joint International Conference. Only original and unpublished work will be accepted for the Conference.

Full papers are to be submitted through the email id: ic.mgmtgu@gmail.com



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MARKETING	HUMAN RESOURCE
<ul style="list-style-type: none"> Global Marketing Marketing Ethics Marketing Resilience Social Media Marketing Transformation of Retail Sector in the New Normal Green Marketing Transformation in Marketing Strategies. Technological Innovations in Customer-Centric Strategy 	<ul style="list-style-type: none"> Employee Resilience Challenges and Opportunities in Work from Home International HR Management Employee Engagement in the New Normal Automation and Analytics in HR Processes Human Resource Transformation Globalization & HRM Ethics & HRM Challenges of HRM
STRATEGY AND INNOVATION	ENTREPRENEURSHIP
<ul style="list-style-type: none"> Strategic Resilience Global Strategy Global Innovation Index Global Innovation and Technology Alliances Ethics in Strategic Planning Corporate Strategy in the Digital Era Technological Innovations in Customer-Centric Strategy 	<ul style="list-style-type: none"> Enhancing Resilience in Small & Medium Enterprises. An Ethical Future, Powered by Startups Open and Integrated Markets Innovation and Entrepreneurship Entrepreneurship : The New Engine of Global Collaborations Opportunities in Crisis Start-up Revolution for Self Reliance New Entrepreneurship Models in the Digital Era
FINANCE	INFORMATION TECHNOLOGY
<ul style="list-style-type: none"> Financial Resilience Ethics in Finance Global Challenges in Public Finance and International Relations International Finance Financial Sustainability New Market Trends and its Effect on Investor Sentiments Developments in Financial Markets Developments in BFSI Sector 	<ul style="list-style-type: none"> Fintech in Business Artificial Intelligence Systems in Business Industry 4.0 Internet of Things (IOT) Technology Penetration in the New World Order Machine Learning in Business Resilient Information Systems Security (RISS) Ethics & Information Technology Pedagogical Advancements in Online Teaching Digitalization of Education
OPERATIONS & SUPPLY CHAIN	ECONOMICS
<ul style="list-style-type: none"> Reshaping Supply Chain Supply Chain Risk & Disruption COVID-19 Supply Chain Systems Global Supply Chain Resilient Supply Chain Ethical and Sustainable Supply Chain 	<ul style="list-style-type: none"> Fostering Economic Resilience Government Schemes and Policies New Economic Models Strategies for Economic Stabilities Post COVID-19: New Economic Order Economic Analysis of Resilience Collaborated Economy

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Title Page : Title of Paper, Name of Author (s), Organization affiliation, Contact details, Abstract (500 words) and Keywords (4-5)

Full Paper : Title, Word Limit - 5000–7,000 words, Format - A4 Size, MS-Word, Font Type-Times New Roman, Font Size - Heading-14; Text-12, **Line Spacing :** Single, Margins-1.5 in chonall four sides

Notes :

- **Tables and Figures :** must have titles and be numbered, and should be incorporated into the text of paper as close to where they are first referred.
- **References :** Should be in APA Style

Publication Opportunities

- The selected papers would be published in the form of an edited book by an International Publisher of repute for dissemination to a larger audience. All rights of publication of research papers accepted in the conference shall rest with the organizers.
- Few selected research papers will be published in Bi-Annual Journal of Management, "Gurugram University Business Review" (GUBR).
- Quality of submitted papers will be adjudged by the reviewers and the best paper award will be conferred track-wise.

Registration & Participation

- Registration Fees includes kit, lunch and tea on both the days.
- All participants/author(s) who register for the event will get Participation Certificate. Anyone of the author(s) can present the paper, however, only those author(s) will be awarded the certificate of presentation who has registered for the event.
- At least one of the authors needs to present their paper on the day of the event. The presentation will be through MS- PowerPoint. Presentation time allocated for each presenter is 5-6 minutes, followed by Question/Answer round.

Travel

The new corporate hub and millennium city Gurugram is just 20 minutes from IGI Airport and is a part of the National Capital Region (Delhi – NCR). With strong presence of multinational sand connectivity through Delhi Metro, the culture of this is city is truly cosmopolitan. Its proximity to Delhi makes it attraction for corporate and tourist sa like, as Delhi is said to be one of the oldest existing cities in the world. Legend estimates it to be over 5,000 years old. In spring the weather is pleasant. It has a rich heritage and place soft our is interest around in and near by areas of Delhi NCR, including the famous Taj Mahal at Agra. One of the major attractions of Gurugram is The Kingdom of Dreams, which is India's first live entertainment, theatre and leisure destination. We will be glad to assist you to make your conference experience comfortable and enjoyable.

Accommodation

Gurugram University extends assistance to accommodation in hotels in Gurugram at the expense of participants. Gurugram is homage to modern and contemporary styling; it has the state of the art luxury five star and seven star hotels. Limited accommodation for participants is available at campus guest house on first come first serve basis. Intimation for reservation of the room should be sent along with the registration fee. Information about hotels in Gurugram is available at conference website.

Registration and Payment

Category of Delegates	With early bird Incentives (till 30 th Aug'22) (In INR)	Regular fee (In INR)
Students	1000	1500
Research Scholars	1500	2000
Academicians	2000	2500
Industry Practitioners	3000	3500
Accompanying person	1000	1500
Foreign Nationals	US\$100	US\$ 120

Registration Fee is payable by Online mode as per the details mentioned below. The payment receipt should be sent to the Convener and should be accompanied by details of the authors/participants i.e. name, designation, institution/organization, mailing address, telephone/mobile no. and email as per the enclosed Delegate Registration form. Online payment details are:

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Editorial Team Profiles

Dr. Amarjeet Kaur – *Editor-in-Chief*



An accomplished academican; an exemplary leader and an action-oriented self-motivated individual; Dr. Amarjeet Kaur has nearly three decades of experience in education and food industry. She is currently working as professor of Accounting; Dean, Faculty of Commerce & Management and Director, Foreign Students Cell at Gurugram University, Gurugram, India. She holds a Ph.D. in Commerce from MD University, Rohtak, India and is a Certified Management Accountant (CMA) from the Institute of Management Accountants (IMA), USA. She has dual master's degree: an MBA from The University of the West of the Scotland (UWS), UK and M.Com from MD University, India. She is traveled extensively and has taught at two prestigious Universities of USA, viz., College of Business (AACSB Accredited) at Valparaiso University, Indiana and North Dakota

State University, North Dakota. She has 8 books and 51 research papers to her credit; about half of these papers are published in Emerald, Sage, Inderscience and ABDC listed journals.

Dr. Amarjeet is associated with UGC EDUSAT program for higher learning and delivers live lectures on Television at Doorsarshan VYAS Channel for Higher Education and has more than 120 videos available on YouTube. She has been conferred with 'Excellence in Academic Leadership' Award by Top Rankers, New Delhi and has been felicitated by Indian Society for Training & Development (ISTD) for her Innovative Practices at her workplace in the year 2015. She has also been conferred with 'Great Indian Woman Leader in Education' Award by Golden Signatures in the year 2021. She holds vast administrative experience as Director and Dean while working with prestigious business schools and regularly conducts training programs for corporate clients. As corporate trainer, she conducts management development programs on Trade Finance, IFRS, Cost Analysis, Letter of Credit and Finance for Non-Finance Executives. She is a very dedicated person, who loves and admires nature and enjoys yoga & travelling.

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Dr. Monika Bhatia – *Editor*



Dr. Monika Bhatia is qualified academican having a passion to work in a dynamic and stimulating environment. She has obtained her Doctorate Degree from UTU Dehradun. She is an alumna of Punjabi University Patiala (M.Com & MBA). She is UGC (NET) qualified. Her areas of interest are accounting and Finance. She has a teaching experience of 18+ years at both under graduate and postgraduate levels. She has attended and presented more than 30 research papers in international and national conferences. She has published 30 research papers in international refereed journals. She has edited a handbook of Management and Behavioral Science. (A refereed publication of society of Management and Behavioral Science.) Her heart lies in helping & mentoring students to grow as capable professionals and complete individuals. She is a person who is positive about every aspect of life and is passionate about learning and development.

Dr. Hawa Singh – Associate Editor

Dr. Hawa Singh is a person of high intellect and insights. He started his academic journey with completion of Ph.D degree in Management from Institute of Management Studies and Research (IMSAR), Maharishi Dayan and University, Rohtak, Haryana. In 2012, he qualified the National Eligibility Test UGC-NET/JRF in Management subject. He obtained his master's degree in Master of Business Administration with specialization of Human Resource Management & Marketing Management. He has participated in a number of seminars and conferences and presented research papers. He has published several research papers/ articles in the esteemed national and international journals and magazines of national repute.

Dr. Naveen Kumar – Associate Editor

Dr. Naveen Kumar has done B.com (Hons), MBA, M.Com; B.Ed. He has obtained his Ph.D Degree from Department of Commerce, MDU Rohtak. He has passed the UGC NET+JRF exam in Both Subjects (Commerce & Management). He is also passed the HTET (HSBE, Bhiwani), CTET (CBSE) & RTET exams (conducted by RPSC Rajasthan). His areas of interest are Quantitative Techniques, Statistics, Income Tax and Finance & Computer Application in Business. He has four-year teaching experience in the Department of Commerce, MDU Rohtak as a research scholar. He was the founder member of Commerce Department at Gurugram University, Gurugram. He has published 15 research papers in Peer-Reviewed International and National Journals. He has presented various research papers in National Seminars and Conferences.