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Unlocking Academic Excellence
ERP Systems and Performance in Higher Education

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ABSTRACT

With ever-changing higher education, the inclusion of technological solutions is crucial for enhancing operational and academic effectiveness. In this arena, Enterprise Resource Planning (ERP) systems have become a major solution shaping academic and administrative operations within higher education institutions (HEIs). Hence, this study examines their role in enhancing academic excellence, made possible by applying the DeLone & McLean Information Systems (D&M IS) Success Model. Data were collected from 513 students across 12 Indian institutions with the help of a standardized questionnaire, on which Partial Least Squares Structural Equation Modeling (PLS-SEM) was utilized to enlighten how excellent information, system, and service, influence the degree of using the systems, drive satisfaction, and lead to net benefits. The study confirmed the positive influence of information and service quality on system usage and user satisfaction, driving academic and institutional success. Unexpectedly, the theory that system quality directly affects satisfaction with ERP was not validated, calling for seamless support systems and engagement techniques. For educational administrators and policymakers looking forward to investing in operational efficiency, data accuracy, usability and training programs, the findings of this study provide an edge.

Keywords: ERP System, Academic Excellence, Higher Education Institutions (HEIs), DeLone & McLean IS Success Model, PLS-SEM

INTRODUCTION

The greatness of today is seen in the degree of knowledge one possesses. Technological developments have shaped the way people acquire new knowledge of concepts. This obliges organizations across sectors, Higher Education Institutions (HEIs) no exception, to opt for technological solutions to ensure seamless operations and success (Sembey et al., 2024). ERP systems represent one of the most revolutionary technologies leveraged by HEIs (Bin Hammad et al., 2024). ERP systems, which were originally crafted for corporate settings, have been adjusted to meet the requirements and needs of educational institutions, combining several functions, including academic activities, administration, and student services into a unified software platform (Mukred et al., 2022; Wijaya, 2023). For HEIs, this integration helps to strive for academic excellence through seamless data management, operations optimization, and enhanced decision-making processes (Lamey et al., 2023). HEIs includes the university, which is its fundamental component. In 1998, the World Declaration defined Higher Education (HE) as "Education provided at the university level or other institutions that are approved by the government as institutions of HE." Generally, the role played by HE in society is, but not limited to,

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developing leaders, educating a diverse range of human resources, creating, and disseminating information (Marginson, 2024; Sage, 2020). For individuals, HE increases income, improves the quality of life, and broadens the choices (McDonnell-Naughton & Păunescu, 2022).

ERP systems hold a notable positive impact on HEI students' performance. Utilizing event data from campus administration, Rafiei et al. (2023) looked at the effect of course sequences on scholarly success and assessed the study trajectories of students admitted in higher education, highlighting the need of ERP systems to track and optimize academic progress. Bervell et al. (2023), in remote learning, studied the driving factors of students' satisfaction and their desire to continuously interact with the portal systems, which could also be applicable to ERP systems in HEIs. Akbar et al. (2023), further emphasized the critical role of AI-based recommendation systems in picking courses for higher education scholars. They aimed to comprehend the experiences and opinions of students on the efficiency, trustworthiness, and usability of such technologies, highlighting the significance of incorporating technology like AI in fostering the decision-making process in academia. To bridge the gap between technological developments and educational operations, Fazil et al. (2024) assessed AI's influence on engagement and performance of university students, presenting the advantages of using AI in academia, such as streamlining course selection, optimizing study means, and contributing to student outcomes.

Research that looks at the potential of ERP systems to influence excellence in HEIs is still short despite extensive literature. The direct effect of these systems on academic performance has been left behind with many studies focusing on their administrative benefits. Research in HEIs concentrated on critical success and failure factors (Abu Madi et al., 2024; Alhazmi et al., 2022; Rajapakse & Thushara, 2023), adoption (Abejo, 2023; Moya & Chukwuere, 2023; Mukred et al., 2022), and challenges and opportunities (Lamey et al., 2023; Mardon, 2024) related to acceptance and integration (Dahri et al., 2024; Wecks et al., 2024). Extensive research is necessary to bridge this gap.

To close this threat, this study looks at the excellent academic performance in HEIs grace to ERP systems implementation. We aim to close this gap by enlightening the ERP technology's potential to enhance student outcomes and giving suggestions for HEIs looking forward to getting the best out of their ERP systems. The findings will not only be useful to institutions aiming at getting the best out of their systems but also will help elevate our understanding of the function of these systems in the contemporary educational landscape.

This study responds to these questions:

1. How do the dimensions of the D&M IS Success Model contribute to ERP systems' success in Higher Education Institutions (HEIs)?
2. How do the ERP systems influence academic performance and operational processes within HEIs?

LITERATURE REVIEW

In HEIs, ERP studies have been conducted in recent times. Using the D&M model, Khand & Kalhoro (2020) examined the role of ERP systems in enhancing student performance in HEIs. They reported that positive learning experiences rely on technology. According to Liu et al. (2020), outstanding academic performance originates from accessible and fortunate education, which also results from robust e-learning platforms. Similarly, Mabaso (2020) emphasized staff satisfaction in HEIs, arguing that satisfied staff offer quality to students, which in turn improves their performance. The university's position is due to academic transformations (Pivneva, 2020), indicating the power of innovations in HEIs. Studying the factors that influence financial ERP success, Epizitone & Olugbara (2020) proposed a methodological approach to assist financial practices through proper organization, implementation, and usage of these systems. Peters & Aggrey (2020) proposed the EPR-based quality model that highlights their implementation to optimize processes. There is a need to assess service quality in HEIs (Camilleri, 2021).

Research on factors influencing students' performance in HEIs has been conducted. High failure and dropout rates have been reported in first-year university scholars, hampering their performance (Le et al., 2020). IS like

ERP may help deal with these issues in HEIs, providing them with deep understanding of factors to consider while implementing ERP to enhance performance. However, this demands wise selection to eliminate drawbacks. Permitting these systems to work together with other technologies like AI and machine learning could elevate academic excellence. Jawad & Shalash (2020) examined how students' performance at AI-Quds Open University is contributed to by e-learning platforms and agreed to their positive contribution.

Literature on trends in ERP in HEIs is still short but elevating. Given their importance, Chang et al. (2020) emphasized the integration of e-learning knowledge systems in higher education. Up on spotting the gap in this field, Gerón-Piñón et al. (2020) emphasized the role of human factors in ERP implementation in academia. Yet, Iyengar & Shakdwipee (2019) emphasized post ERP implementation productivity in Indian HEIs, focusing on demographics. Lean Six Sigma can also help foster quality in HEIs (Cudney et al., 2020). In Chinese higher education systems, bilingual education was reported to aid in implications clarification (Tong et al., 2020). Furthermore, Awan et al. (2021) identified driving factors of e-learning systems' acceptance and implementation in HEIs. Emphasizing drivers, drawbacks, opportunities, and success factors, Alhazmi et al. (2022) reported minimal research in this field and need for further investigations. The growing interest in the impact of technology on academic processes calls for further research in this area.

RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

Research Model

This study adopts the redefined DeLone & McLean (2003) model, deemed by researchers to excel in investigating IS success for decades. This model (presented in Figure 1) implies that "Information Quality (IQ), System Quality (SQ), Service Quality (SerQ), Use, User Satisfaction (US), and Net Benefits (NB)," contribute to ERP systems' success.

We analyzed the links between these dimensions. Excellent IQ facilitates decision-making, and satisfaction made possible by information accuracy, timeliness, and relevance (Keathley-Herring et al., 2024). SQ also influences user engagement and

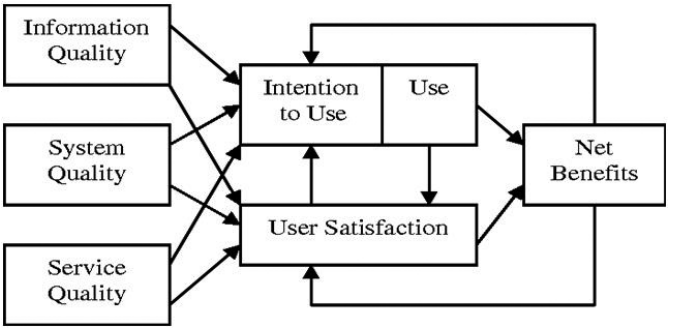

Figure 1 The D&M IS Success Model

satisfaction with the IS. It implies reliability, design quality, IT infrastructure, and IS's overall success. The Robust SerQ model can drive use and satisfaction with IS across sectors. This can be made possible by ensuring strong interaction and responsiveness (Preaux et al., 2023). Systems use and satisfaction together may lead to perceived NB (like improved organizational efficiency and user performance) and satisfaction (Kaklauskas & Kaklauskiene, 2022). However, this requires suitable implementation techniques that enhance engagement (Breno et al., 2022).

Hypotheses Development

Information quality (IQ) influences both use and satisfaction. System users are likely to interact with it only when the information provided is perceived to be accurate, relevant, and on time. This significantly contributes to satisfaction. This gives rise to the following hypothesis:

- *H_1: Information quality significantly affects ERP Use*

In the Iranian health record systems, IQ was reported a major driver of satisfaction (Bashiri et al., 2023). Similarly, in mobile healthcare systems (MHS), Keikhosrokiani et al. (2020) reported a mediation-free, direct influence of IQ on satisfaction. To improve familiarity with the system and satisfaction, institutions should also improve their IQ. We based on this discussion to develop this hypothesis:

- *H_2: Information quality significantly affects User satisfaction with ERP*

Not only are they influenced by IQ but also System quality (SQ). SQ implies its performance, usability, and reliability. Bashiri et al. (2023) reported the

influence of SQ on the overall success of the systems, focusing on its influence on engagement. This interconnectedness between SQ and US indicates that improved system may result in excellent usage, giving rise to the following hypothesis:

- *H_3: System quality significantly affects ERP Use*

Furthermore, the influence of SQ on satisfaction is evidenced in studies and across sectors like in healthcare where Zheng et al. (2023) reported a strong connection between SQ and satisfaction, giving rise to the development of this hypothesis:

- *H_4: System quality significantly affects User satisfaction with ERP*

The model also highlights a strong connection between service quality (SerQ), use, and satisfaction. Excellent SerQ contributes to more usage resulting in substantial satisfaction. Bello & Abdullah (2022) and Wang & Teo (2020) have confirmed this link and testified a direct effect of SerQ on satisfaction in mobile services and computer-based testing. Keikhosrokiani et al. (2020), further reported a mediating effect of satisfaction between the other two dimensions (SerQ and Use). First, SerQ influences satisfaction, which also results in more use. This evidence represents the need to emphasize top-notch services to ensure improved use and satisfaction. We built these hypotheses:

- *H_5: Service quality significantly affects ERP Use*
- *H_6: Service quality significantly affects User satisfaction with ERP*

The model proposes a relationship between the dimensions of use, US, and net benefits (NB) and highlights their contribution to the overall success of the IS. Satisfaction serves as a go-between for NB and system use while also use itself directly influences NB. Research reports the increased interaction with the systems only when users are satisfied. This results in benefits, including better decision-making and improved performance (Zheng et al., 2023). In MHS, the US has also been reported as a moderator of the influence of SQ and SerQ on human engagement (Keikhosrokiani et al., 2020). Furthermore, the extent of system use, and satisfaction are closely tied to the realization of NB, with notable levels of use and satisfaction delivering better organizational results (Ji et al., 2021). These insights necessitate organizations to foster both efficient system usage and satisfaction to optimize the benefits of the system. We based on this relationship to develop the following hypotheses:

- *H_7: ERP Use significantly affects User satisfaction with the ERP*
- *H_8: ERP Use significantly affects ERP Net benefits*
- *H_9: User Satisfaction significantly affects ERP Net benefits*

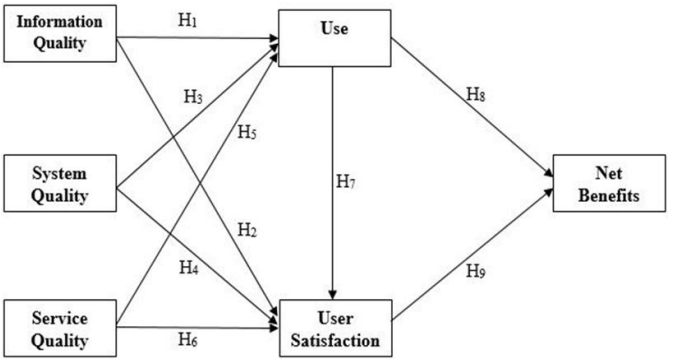

Figure 2 Research Model

According to DeLone & McLean, "Intention to Use (IU) and Use (U)" are the alternatives, with IU being preferable in situations when usage is mandatory. However, attitude (IU) and their ties to use (U) are challenging to quantify. Therefore, researchers may decide to continue with Use although having a better grasp of it. Therefore, the present research employs Use rather than IU as an ERP systems success quantifier because Use is seen to have a connotation that is nearer to success than IU.

The proposed link between IQ, SQ, SerQ, Use, and US dimensions bases itself on DeLone & McLean's empirical as well as theoretical work. They proposed that Use and US are inextricably linked and that when Use is pleasant, US rises, resulting in certain NB. They also presume that the NB from the user's stance of the system would influence and either increase or reduce Use and US. This makes it difficult for researchers to explicitly and precisely describe how 'Net Benefits' are to be quantified. Therefore, to avoid adding complexity to the model, the present study omitted the feedback loops from NB to Use and US, as presented in Figure 2.

METHODOLOGY

Emphasizing ERP systems at HEIs, we employed a descriptive approach to evaluate and validate the D&M IS success model, offering deep understanding of

ERP systems' effect on students' outcomes, including a slight cross-national comparison. A standardized pre-tested questionnaire designed using a "five-point Likert scale" (from "Strongly Disagree" to "Strongly Agree") was administered to extract data from students at HEIs implementing the system. This scale has been widely used in IS studies for decades, guaranteeing reliability and consistency of responses in relation to other studies of a similar nature. Following the pre-test, the questionnaire was enhanced for more precision and applicability.

To capture a heterogeneous and geographically distributed student population, data were gathered from a sample of 513 students across twelve Indian HEIs. Three categories; high school scholars, graduates, and master's holders, were considered, ensuring all primary academic levels were suitably represented. This shows how differently ERP systems affect students at distinct phases of their journeys. For fair representation, we based the sample distribution on students' population at each institution. However, the objective of data collection was to cover a broader scope of students' experiences with the systems despite the number of institutions involved. Therefore, the sample representations were not equally distributed across institutions.

We used SmartPLS software using "Partial Least Squares Structural Equation Modeling (PLS-SEM)" (Ringle et al., 2022) to derive insights from data since they were not normally distributed. This software not only can handle small and large sample sizes but also can deal with non-normal data distributions. It follows two-step process; the "Measurement Model" for "Confirmatory Factor Analysis" and the "Structural Model" for examining the significance and relevance of the "path coefficients and loadings (Hair et al., 2021)." A complete analysis was achieved by applying bootstrapping techniques (Hair et al., 2012; Hulland, 1999), a technique that ensures reliable and valid outputs from data.

RESULTS

Descriptive Statistics

The demographics of 513 participants are presented in Table 1. Age varied from below 20 to above 30 years old, 75% falling within the 20–25 age bracket. 60.4% (n = 310) of the sample was covered by males, females covering only 39.6% (n = 203). This shows that when it comes to interacting with ERP systems, males are superior. Regarding using the systems, graduates are at

Table 1 Participants' Demographics (n = 513)

Profile	*Category*	*Frequency*	*Percentage*
Gender	Male	310	60.4
	Female	203	39.6
Age (Years)	< 20	50	9.7
	20–25	385	75
	26–30	68	13.3
	> 30	10	1.9
Qualification	Higher Secondary School (12th)	68	13.3
	Graduation	261	50.9
	Post-Graduation	184	35.9
Student Type	Indian student	326	63.5
	International student	187	36.5
Period of Use	Less than 1 year	46	9
	1 to 2 years	253	49.3
	2 years and above	214	41.7
Extent of Use	Rarely	25	4.9
	Sometimes	161	31.4
	Often	201	39.2
	Always	126	24.6

Source: Primary Data

the forefront with up to 50.9% of the total respondents, succeeded by post-graduates (35.9%) and high school scholars (13.3%). The maximum use of the systems by graduates may be due to their complex coursework and strong technological expertise.

The students' distribution was high from Indians (63.5%) to international students (36.5%). This shows a considerable use of ERP systems by a diverse group of students, highlighting their applicability. The high number of Indian students was because the study was itself conducted in India and data was obtain from Indian HEIs. 49.3%, almost half of students had been using the systems for 1 to 2 years, while 41.7% corresponded with over 2 years of use experience, showing notable interaction overtime. The degree of systems reliability for academic purposes was assessed through the extent of use. 24.6% of students were found to utilize the systems constantly, while 39.2% used the systems often.

Measurement Model Evaluation

Firstly, factor loading, a determinant of the indicator-construct relationship's magnitude, was assessed. According to Hair et al. (2023), loadings that satisfy the statistical cutoff of over 0.70 identify a strong link between these two aspects. High loadings, as seen in Table 2, imply the indicators' reliability and the precise depiction of the constructs they intended to assess. According to Schreiber (2020) and Alhempi et al. (2024), however, regardless of the sample size, variables with at least four loadings greater than 0.60 may be stable. Therefore, factor loading values below 0.70 but greater than 0.60 are considered in the present study.

The reliability was also assessed through Composite Reliability (CR), ensuring the constructs' internal consistency. According to Hair et al. (2023), the indicators measuring the same construct are adequately related when the *CR > 0.70* criterion is met. The current study confirms reliability since all CR values met this criterion. This established criterion is accepted in SEM, guaranteeing that the true score is consistently reflected in the scale used while assessing the constructs. Validity was further assessed through convergent validity (CV) and discriminant validity (DV). CV is confirmed by the Average Variance Extracted (AVE), whose acceptable cutoff must be 0.50. Results confirm validity since all AVE values satisfy established criteria. This ensures that the latent construct represented by the indicators explains more than half of the variance observed in indicators (Hair et al., 2023). This helps verify that the indicators do, in fact, measure the same underlying concept.

Table 2 Confirmatory Factor Analysis

Construct	*Item*	*Loading*	*CR*	*AVE*
Information Quality	IQ1	0.619	0.859	0.552
	IQ2	0.813		
	IQ3	0.792		
	IQ4	0.698		
	IQ5	0.777		
System Quality	SQ2	0.691	0.840	0.568
	SQ4	0.809		
	SQ5	0.745		
	SQ6	0.766		
Service Quality	SerQ1	0.767	0.816	0528
	SerQ2	0.761		
	SerQ4	0.627		
	SerQ5	0.742		
Use	U2	0.798	0.820	0.534
	U3	0.765		
	U4	0.675		
	U5	0.677		
User Satisfaction	US2	0.779	0.796	0.565
	US3	0.725		
	US4	0.751		
Net Benefits	NB1	0.749	0.859	0.506
	NB2	0.664		
	NB3	0.635		
	NB4	0.645		
	NB5	0.763		
	NB6	0.797		

Source: Primary Data

DV, assessed through the Heterotrait-Monotrait (HTMT) ratio (Table 3), determines uniqueness of constructs. Henseler et al. (2015) suggest superiority of HTMT criterion to traditional techniques like the Fornell-Larcker criterion, grace to its high ability to detect DV issues. It helps to prevent construct overlaps

in structural modeling, which might mislead the interpretations.

Table 3 Discriminant Validity: HTMT Results

Construct	*IQ*	*NB*	*SQ*	*SerQ*	*U*	*US*
IQ						
NB	0.668					
SQ	0.666	0.468				
SerQ	0.840	0.654	0.862			
U	0.727	0.964	0.665	0.784		
US	0.752	0.891	0.628	0.856	0.929	

Note: The $HTMT_{.90}$ indicates discriminant validity.

Source: Primary Data

HTMT value must fall below the required cutoff of 0.90 to prove DV (Gold et al., 2001). The results revealed slight differences for the Use-NB and US-Use constructs whose values surpassed this cutoff. Even yet, the differences (0.064 and 0.029) are small to refute DV (Henseler et al., 2015). Therefore, the present study acknowledges DV being established between constructs.

Effectively applying these criteria can help researchers validate their measurement models and ensure reliability, which may allow for accurate interpretation of the connections between latent constructs and their respective indicators.

Structural Model Assessment

R^2 value exceeding 0.36 is deemed to have substantial explanatory power, indicating the magnitude of variance explained by constructs in relation to their indicators (Wetzels et al., 2009). The R^2 values in Figure 3 highlights satisfactory results in research model and relationships: 0.388 for ERP Usage, 0.480 for US, and 0.610 for NB. These results indicate that NB explains the largest amount of variance (61.0%), followed by US (48.0%) and ERP Usage (38.8%).

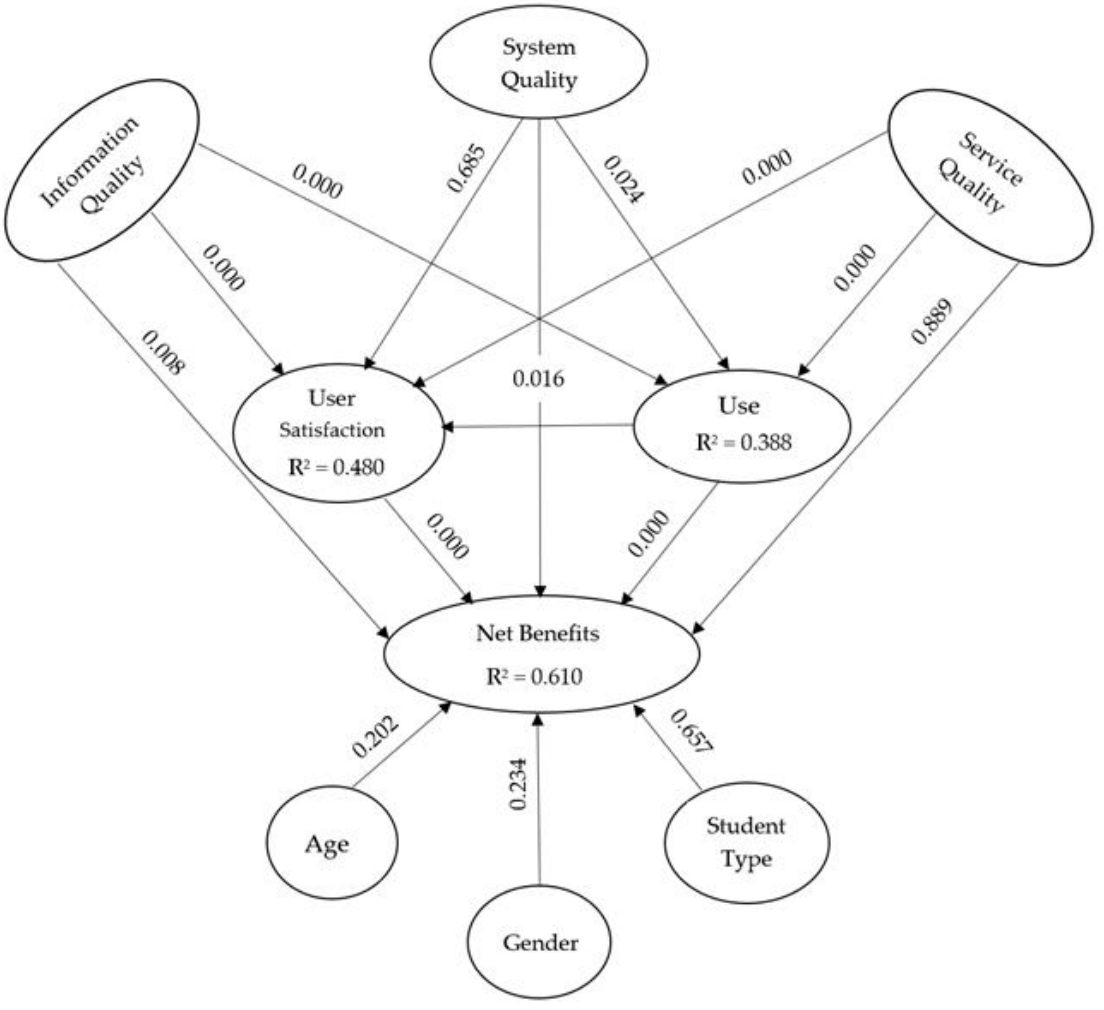

Figure 3 Structural Model Results

Table 4 Structural Model Evaluation

Hypothesis	*Relationship*	*β*	*SD*	*t-value*	*p-value*	*Decision*
H_1	IQ ⟶ U	0.296	0.054	5.514	0.000	Backed
H_2	IQ ⟶ US	0.170	0.052	3.237	0.000	Backed
H_3	SQ ⟶ U	0.150	0.067	2.252	0.024	Backed
H_4	SQ ⟶ US	0.017	0.042	0.406	0.685	Denied
H_5	SerQ ⟶ U	0.273	0.062	4.380	0.000	Backed
H_6	SerQ ⟶ US	0.232	0.050	4.661	0.000	Backed
H_7	U ⟶ US	0.395	0.047	8.431	0.000	Backed
H_8	U ⟶ NB	0.522	0.050	10.513	0.000	Backed
H_9	US ⟶ NB	0.256	0.050	5.184	0.000	Backed
	Age ⟶ NB	-0.042	0.033	1.277	0.202	Denied
	Gender ⟶ NB	-0.070	0.059	1.191	0.234	Denied
	Student Type ⟶ NB	0.029	0.065	0.452	0.651	Denied

Note: β = Estimate, SD = Standard Deviation

Source: Primary Data

As Table 4 shows, most hypotheses were backed up. Information Quality (IQ) influenced ERP Use (β = 0.296, $p < 0.001$), supporting H_1. The study findings validated H_2, showing a significant link between IQ and User Satisfaction (US) (β = 0.170, $p < 0.001$). With reference to H_3, results confirmed a substantial impact of System Quality (SQ) on ERP Use (β = 0.150, $p < 0.05$). H_4, however, was not backed since SQ had no discernible impact on US (β = 0.017, $p > 0.05$. The findings validated H_5, indicating that ERP Use is influenced by Service Quality (SerQ) (β = 0.273, $p < 0.001$). The significant impact of SerQ on US was also evident, validating H_6 (β = 0.232, $p < 0.001$). Regarding H_7, ERP Use significantly improved on US (β = 0.395, $p < 0.001$), thus confirming the theory. For H_8, results indicated a strong relationship between ERP Usage and ERP NB (β = 0.522, $p < 0.001$). Results further, validated the significant influence of US on ERP NB, supporting H_9 (β = 0.256, $p < 0.001$).

The analysis included gender and student type (local and foreign) as control variables. The results revealed a non-significant influence of age (β = –0.042, $p > 0.05$), gender (β = –0.070, $p > 0.05$), and student type (β = 0.029, $p > 0.05$) on ERP NB, indicating that the perceived benefits of ERP systems, such as improved academic excellence and operational efficiency, are consistent across different ages, genders, and between local and foreign students. This insignificance illustrates that the effectiveness of ERP systems in bolstering academic outcomes is uniformly experienced by all students, irrespective of their demographic profiles or national origin, underscoring the inclusiveness of the systems in supporting diverse student populations within HEIs.

DISCUSSION

This study provides an in-depth understanding of how academic performance in HEIs might improve grace to ERP systems. We base the discussion on the backed and refuted verdicts to offer support to current findings and highlight their role in the context of HEIs' academic excellence.

The results confirmed a direct effect of information quality (IQ) on ERP use. Several recent studies have reported this link, presenting the role of high-quality information in efficient use of the systems. With ERP, users rely heavily on data to make proper use decisions. This was evidenced by Bashiri et al. (2023), who reported that outstanding system information increased the extent of use in healthcare settings. User interaction with healthcare mobile systems was significantly influenced by the quality of information provided, suggesting heavy reliance of any IS on this quality to function well (Keikhosrokiani et al., 2020). In HEIs, Lamey et al. (2023) reported the influence of informative ERP system data on use by students and faculty. These studies support current findings that

fostering ERP use in HEIs necessitates excellent quality information. The results also confirmed the theory that students are satisfied with ERP systems when information is excellent. High-quality information boosts users' confidence and trust to rely on the systems, driving satisfaction. This association has been reported across numerous sectors. For instance, Abu Madi et al. (2024) concluded a considerable contribution of excellent information to satisfaction, particularly in public sector HEIs. Wang & Teo (2020), further, in the context of mobile government services, reported a strong link between US and the perceived IQ offered, highlighting that user (students or staff) is inclined to satisfaction with the ERP systems when they find accuracy, relevance and usefulness in the provided information. Current findings are consistent with these studies, validating the critical role of IQ in guaranteeing satisfaction with the systems.

The study findings also discovered a major impact of system quality (SQ) on ERP use, confirming H3. This aligns with a study by Zheng et al. (2023), who reported that SQ, notably reliability and usability, facilitates engagement in hospital information systems. In their study on the ERP systems intended for public institutions, Breno et al. (2022), further confirmed a positive impact of SQ on user behavior. In the educational landscape, the same results have been reported by different studies. Lamey et al. (2023) reported SQ as a major determinant in the continuous usage of ERP systems, fostering the idea that users are inclined to interact with systems that are reliable, stable, and easy to use. These studies collectively support the idea that fostering ERP use in HEIs necessitates the rocking SQ. Contrary to the expectations, the study results revealed that students' satisfaction with using ERP was not significantly influence by SQ. This intriguing since numerous studies have reported a substantial link between SQ and satisfaction with the systems. However, some recent studies indicate that satisfaction may not always be directly influenced by SQ. According to Keathley-Herring et al. (2024), for instance, SQ contributed to usage; however, its effect on satisfaction was mediated by other variables including the quality of service rendered and user training. Lamey et al. (2023) also reported that even with excellent SQ, users were less pleased in the absence of service quality and support mechanisms. This implies that even with SQ linked to use, satisfaction may be influenced by other variables, explaining the refusal of H_4 in this study.

H_5 confirms the positive effect of service quality (SerQ) on ERP use. Factors like responsiveness and seamless communication significantly contributed to system use in MHS (Keikhosrokiani et al., 2020). Prompt and efficient support from operators/staff influenced the students' intention to interact with the systems (Bello & Abdullah, 2022). HEIs that focus on providing best in class and customized technical support are edged to experience high interaction rates with the systems (Mukred et al., 2022). This highlights the criticality of SerQ to improve the use of ERP systems. Results also evidenced a positive impact of SerQ on satisfaction with the systems, highlighting the role of timely response and solid support in driving satisfaction (Mukred et al., 2022). In institutions where SerQ is recognized, students were satisfied with e-learning platforms (Bervell et al., 2023). Bello & Abdullah (2022) stressed the criticality of SerQ to improve satisfaction with computer-based systems, providing incremental support. The present study validates this connection in the context of ERP systems, reinforcing these findings.

H_7 confirms the positive influence of ERP use on satisfaction. In healthcare IS, Zheng et al. (2023) reported satisfaction with the systems as users were used to their functionalities grace to regular use. Similarly, Keikhosrokiani et al. (2020) revealed high satisfaction levels with mobile healthcare systems as users recognized their benefits due to frequent use. Lamey et al. (2023) documented greater satisfaction from students who extensively used ERP in classroom, claiming that it allowed easy access to education resources and streamlined admin functions. These findings align with this study's findings, confirming that persistent systems' use results in greater satisfaction. The theory that ERP use is positively linked to net benefits (NB) was also confirmed. Benefits, including better results and efficient workflows, were achieved due to frequent use of health IS (Keikhosrokiani et al., 2020). In higher education, regular ERP use improves efficiency and decision-making process, offering an edge to experience considerable benefits (Abu Madi et al., 2024). Current results confirm that regular ERP use results in greater benefits, aligning with these findings.

The study further revealed that satisfaction with the systems results in NB. Satisfied users contribute to benefits, such as service delivery and organizational performance (Breno et al., 2022). In public higher education, Abu Madi et al. (2024) found that satisfaction with ERP was linked to NB. This emphasizes the exploration of the systems' functionalities by satisfied users. These studies support the current findings, which validate that in HEIs, improving satisfaction with EPR systems is crucial to achieving considerable benefits.

IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

Practical Implications

Current findings show that ensuring high-quality information and service rendered by the ERP system is crucial for efficient use of the systems and driving satisfaction. Institutions must, therefore, emphasize the continuous upgrading and accuracy of data stored in ERP systems, while investigating top-notch technical support and responsive services. Although not directly tied to the User Satisfaction in this study, addressing issues within SerQ can still encourage the degree of utilization by enhancing usability and reliability. This emphasizes the significance of developing and implementing ERP systems that focus on user-centered approach, especially in large and diversified HEIs. These results, for decision-makers, serve as a key point to focus on investments in technical support infrastructure and training to mitigate user resistance and familiarity-based issues. Aligning ERP functionalities with the needs of students, faculty, and administrators can guarantee HIEs an edge for achieving substantial operational efficiency and academic benefits, such as proper resource management and improved academic excellence.

Theoretical Implications

The study's findings enrich our knowledge of how ERP systems may drive academic outcomes, considering critical factors of the caliber of information and system, and genuine service rendered by the system. Denying the direct influence of system quality on satisfaction presents significant theoretical issues, opening doors to the possibility of other mediating factors like user competency and institutional culture. Subsequent research may explore these dynamics to furnish a more holistic comprehension of ERP success in scholarly settings.

Future Research Agenda

While this research offers valuable insights, several gaps remain that need to be addressed by future research. We propose four suggestions for future research. To begin with, the link between satisfaction and academic excellence warrants in-depth investigation, especially how varying levels of ERP adoption influence students' results in dynamic educational environments (e.g., public vs. private institutions). Subsequent studies could employ a longitudinal methodology to track the temporal correlation between academic excellence and ERP system advancements. Second, we revealed that ERP success is critically determined by the quality of rendered services. Yet, more investigation be done to determine how customized services and/or flexible technical support models foster system adoption with great emphasis on resource-constrained institutions. Future studies may further investigate how incorporating innovative technologies like AI and Machine Learning technologies within ERP systems might optimize students' academic decision-making and engagement. Finally, future research agenda should focus on the long-term effects of ERP systems on institutional performance metrics like faculty productivity, fiscal management, and effective resource allocation, that goes beyond student outcomes. Researchers can offer a deep understanding of ERP systems in transforming higher education if the scope of research is broadened.

CONCLUSION

This study provides deep analysis of the effect of ERP systems on academic excellence in HEIs. Current findings revealed major influence of information, system, and service quality of the ERP on their usage, satisfaction, and net benefits, confirming significant impacts. Both ERP use and satisfaction are significantly influenced by quality information and service. This emphasizes that accurate information and prompt support optimize ERP effectiveness. Although no direct effect of system quality on satisfaction was detected, its role in optimizing the systems' usage requires ongoing refinement to improve user engagement. Information accuracy, service quality, and user training be focused on by HEI administrators to

enhance the successful implementation of ERP, which will eventually improve academic excellence. Other corners in higher education like faculty productivity and institutional efficiency eventually be emphasized in future research. Should they consider the evolving integration of AI and customized support systems within ERP systems? Future research may also build on current findings and further solidify the role of these systems in transforming higher education.

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Appendix 1 Opted Questionnaire

Construct	*Item Code*	*Statement*
Information Quality	IQ1	The ERP system provides relevant information.
	IQ2	The ERP system provides complete information.
	IQ3	The ERP system offers accurate information.
	IQ4	The ERP system gives easily understandable information.
	IQ5	The ERP system delivers timely information.
System Quality	SQ2	The ERP system is dependable.
	SQ4	The ERP system provides quick response.
	SQ5	The ERP system allows for easy access to information.
	SQ6	The ERP system efficiently offers accurate data about students' attendance and grades.
Service Quality	SerQ1	The ERP system is reliable.
	SerQ2	The ERP system provides quick response.
	S erQ4	The ERP support team supports the students' interests.
	SerQ5	The ERP system is equipped with advanced hardware and software.
Use	Use2	I use the ERP system to assist my academic activities (Classroom lectures, research projects, workshops, etc.).
	Use3	I use the ERP system to check for academic updates (Announcements, research breakthroughs, scholarship opportunities, etc.).
	Use4	I use the ERP system to track my academic performance (Viewing grades, accessing transcripts, monitoring the degree requirements, etc.).
	Use5	I use the ERP system to access library services.
User Satisfaction	US2	The ERP system allows me to receive semester-wise course evaluations.
	US3	The ERP support team assists me whenever needed.
	US4	The ERP system allows me to provide feedback on my overall learning experience.
Net Benefits	NB1	The ERP system provides study materials that aid in examination preparation.
	NB2	The ERP System offers the opportunity to apply for supplementary programs effectively.
	NB3	The ERP system allows me to track my progress throughout the programs.
	NB4	The ERP system allows me to apply for leave.
	NB5	The ERP aids in the improvement of teaching in the classrooms.
	NB6	The ERP System improves my overall academic performance.