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Research Article

The Impact of ERP Software Integration on Classroom Education, Academic Performance, and Institutional Management: An Empirical Study

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Abstract

Background of the Study: The rapid advancement of digital technology has transformed the education sector, creating new opportunities for institutions to improve teaching, learning, administration, and academic performance. Enterprise Resource Planning (ERP) software has emerged as an integrated technology solution that connects various institutional functions, including student information management, attendance, examinations, academic records, faculty administration, communication, and institutional reporting. In classroom education, ERP systems can facilitate real-time access to academic information, improve coordination between teachers and students, support data-driven decision-making, and enhance the efficiency of institutional management. The integration of ERP software may also contribute to improved classroom engagement, better academic monitoring, personalized learning support, and timely identification of students requiring additional assistance. However, the effectiveness of ERP implementation depends on factors such as technological infrastructure, user acceptance, faculty competency, training, system usability, and institutional support. Therefore, examining the impact of ERP software integration on classroom education, academic performance, and institutional management is essential for understanding its contribution to educational quality and organizational effectiveness. Against this background, the present study investigates how ERP-enabled educational environments influence teaching-learning processes, student academic outcomes, and institutional management practices, while also identifying the challenges and opportunities associated with effective ERP adoption in educational institutions.

Objectives: Enterprise Resource Planning (ERP) software has increasingly emerged as an important digital infrastructure for educational institutions seeking to integrate academic, administrative, financial, examination, attendance, communication, and student-support functions within a unified information environment. Although ERP systems are widely used in higher education, empirical research examining their combined influence on classroom education, academic performance, and institutional management remains comparatively fragmented. The present study investigates the impact of ERP software integration on classroom effectiveness, academic performance, and institutional management, with particular emphasis on system usability, functional integration, information accessibility, and administrative efficiency. The objective of the study is to examine whether ERP-enabled integration contributes significantly to improved educational delivery and institutional performance and to identify the system-related factors that most strongly influence these

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outcomes.

Methodology: The study adopts a quantitative, cross-sectional research design. For the purposes of this manuscript, an illustrative dataset of 200 respondents comprising students, faculty members, and administrative personnel is used to demonstrate the proposed empirical analysis. Data are structured through a questionnaire based on a five-point Likert scale. The independent dimensions include ERP usability, ERP integration, information accessibility, and administrative efficiency, while classroom effectiveness, academic performance, and institutional management effectiveness constitute the major outcome dimensions. Descriptive statistics, reliability analysis, Pearson correlation, multiple regression, ANOVA, and hypothesis testing are employed to examine the proposed relationships.

Contribution: The contribution of the study lies in integrating three traditionally separate perspectives—pedagogical effectiveness, learner outcomes, and institutional management—into a single ERP-oriented analytical framework. The study argues that ERP should not be viewed merely as an administrative software package. Rather, when academic and administrative information is effectively integrated, ERP can create a connected institutional ecosystem in which attendance records, assessment information, student progress, academic scheduling, faculty activities, communication, and management reporting can support more timely decisions. Existing research demonstrates that ERP implementation in higher education is affected by stakeholder acceptance, training, change management, system quality, process alignment, and institutional governance. Recent research further emphasizes that ERP adoption in higher education requires sustained stakeholder involvement and alignment between technological functionality and institutional processes.

Expected Outcomes: The expected outcomes of the study are that higher levels of ERP integration will be positively associated with classroom effectiveness, academic performance, and institutional management effectiveness. The illustrative statistical results indicate positive and statistically significant relationships among the major variables. ERP integration and information accessibility emerge as particularly important predictors, while administrative efficiency demonstrates a strong association with institutional management. The findings suggest that educational institutions can derive greater value from ERP investments when implementation is accompanied by user training, process redesign, data governance, technical support, leadership commitment, and continuous evaluation. The study concludes that ERP integration can function as a strategic educational capability rather than simply an information technology investment. However, the magnitude of its effect depends on the quality of implementation and the extent to which technology is aligned with teaching-learning requirements and institutional processes.

KEYWORDS: Enterprise Resource Planning, ERP Integration, Classroom Education, Academic Performance, Institutional Management, Higher Education, Digital Transformation, Information Accessibility, Educational Technology, Administrative Efficiency.

1. INTRODUCTION

The rapid digital transformation of education has fundamentally changed the way educational institutions manage teaching, learning, administration, communication, assessment, and institutional decision-making. Universities and colleges increasingly operate within complex environments involving multiple stakeholders, including students, faculty members, administrators, parents, regulatory authorities, accreditation agencies, employers, and external partners. As institutional complexity increases, the need for integrated information systems has become more significant. Enterprise Resource Planning (ERP) software represents one of the major technological approaches adopted by educational institutions to integrate dispersed processes and information resources.

Traditionally, educational institutions have operated through multiple independent systems. Student admissions may be managed through one application, attendance through another, examination records through a separate database, finance

through accounting software, and human resources through another system. Such fragmented structures frequently create information silos, duplicate data entry, inconsistent records, delays in communication, and difficulties in generating comprehensive institutional reports. ERP attempts to overcome these limitations by creating an integrated platform in which multiple functional areas share data and processes.

In the educational context, ERP may incorporate student information systems, admissions, attendance, examinations, timetable management, learning-related information, faculty records, human resources, finance, library services, inventory, communication, and institutional reporting. The integration of these functions can potentially improve organizational coordination and provide decision-makers with more timely and consistent information. Research on ERP functionality in higher education has emphasized that educational institutions require systems designed around their specific academic and

administrative processes rather than simply adapting conventional business-oriented ERP structures.

The relevance of ERP extends beyond administrative efficiency. In an integrated academic environment, teachers may access attendance information, assessment records, student profiles, academic schedules, and learning-related information through connected systems. Administrators can monitor institutional indicators and identify emerging problems more quickly. Students may obtain information concerning attendance, examinations, schedules, fees, academic progress, and institutional communication through a common digital platform.

However, the relationship between ERP integration and educational outcomes is not automatically positive. Technology itself does not guarantee improved learning. The effectiveness of ERP depends on system quality, usability, data quality, user acceptance, training, organizational readiness, process alignment, leadership support, and the willingness of stakeholders to use the system consistently. Research on ERP in higher education has identified user acceptance as a major issue, with technology adoption models such as UTAUT being applied to understand behavioural intention and actual usage.

Higher education institutions also differ significantly from conventional commercial organizations. Universities and colleges often have decentralized governance structures, multiple academic departments, diverse professional groups, and complex decision-making processes. Consequently, ERP implementation may face resistance when the system is perceived as incompatible with existing academic practices. Recent research on higher education ERP implementation identifies stakeholder involvement, change management, process alignment, training, resource allocation, and sustained leadership commitment as important factors affecting adoption and implementation outcomes.

The pedagogical dimension of ERP is particularly important. Although ERP systems are generally introduced for administrative integration, their data infrastructure may indirectly influence classroom education. For example, accurate attendance information can help faculty identify students at risk of disengagement. Integrated assessment records can support academic monitoring. Centralized schedules can reduce administrative confusion. Information accessibility can enable faculty and students to make more timely decisions. Such benefits are consistent with the broader movement toward learning analytics and data-informed educational management. Research has also examined ERP as a learning environment. Studies of ERP-based management learning suggest that system quality, process quality, and training can influence student performance. Similarly, experiential approaches to enterprise-system education propose that practical exposure to integrated systems may improve student engagement, self-efficacy, and learning outcomes.

Despite these developments, a gap remains in understanding ERP as an integrated institutional ecosystem connecting classroom education, academic performance, and institutional management. Much of the existing literature examines ERP

implementation challenges, user acceptance, organizational performance, or administrative effectiveness separately. The present study attempts to bring these dimensions together.

The central argument of this research is that ERP integration creates value through interconnected mechanisms. First, it improves information accessibility. Second, improved information accessibility supports timely academic and administrative decisions. Third, timely decisions can improve classroom coordination and student support. Fourth, improved coordination may contribute to academic performance and institutional management effectiveness.

The study therefore examines ERP integration from a multidimensional perspective. It considers whether system usability, functional integration, information accessibility, and administrative efficiency are associated with improved educational and organizational outcomes.

2. REVIEW OF LITERATURE

2.1 Enterprise Resource Planning Systems

ERP refers to integrated information systems designed to coordinate organizational processes through a common technological infrastructure and shared database. Traditional ERP applications originated primarily in business and manufacturing environments, where integration between production, inventory, finance, human resources, and supply chains was essential. Over time, ERP adoption expanded into service organizations, healthcare, government, and education.

In educational institutions, ERP can integrate functions including admissions, student records, attendance, examinations, finance, human resources, procurement, library management, and institutional reporting. The principal advantage of integration is that information generated by one department can become available to other authorized users without repeated data entry.

ERP therefore represents more than software installation. It involves organizational process transformation. Successful implementation requires institutions to examine how information flows through departments and how technology can support institutional objectives.

2.2 ERP in Higher Education

Higher education institutions have increasingly adopted ERP to address fragmented information systems and administrative complexity. However, higher education ERP implementation presents unique challenges. Universities have multiple stakeholders with different requirements and expectations. Faculty members may prioritize academic autonomy, while administrators may prioritize standardization and efficiency. Students generally expect accessibility and convenience.

Earlier research on academic ERP implementation demonstrated that introducing ERP into universities involves negotiations among multiple actors and competing organizational priorities. This indicates that ERP implementation is not merely a technical project but also an organisational change process.

Research on ERP functionality in higher education further indicates that educational ERP systems must reflect the specific requirements of academic institutions. Generic business ERP structures may require significant adaptation to address the unique needs of educational environments.

More recent research confirms that ERP implementation in higher education requires careful stakeholder management. A 2026 study of German higher education institutions identified project-team composition, resource allocation, change management, process alignment, training, support, and leadership commitment as important adoption factors.

2.3 ERP Usability and User Acceptance

Usability represents the extent to which users perceive the ERP system as easy to understand, navigate, and operate. A technically sophisticated system may fail to generate benefits if users find it difficult to use.

User acceptance is closely related to perceived usefulness, perceived ease of use, behavioural intention, facilitating conditions, and social influence. The UTAUT framework has been applied to understand ERP adoption in higher education. Research examining ERP acceptance in higher education indicates that user perceptions and institutional conditions influence behavioural adoption and system usage.

In the context of classroom education, usability is important because faculty members require quick access to attendance, student information, assessment records, and schedules. If ERP interfaces are complicated, faculty may avoid using the system or rely on parallel manual processes.

2.4 ERP Integration and Information Accessibility

Integration is one of the central characteristics of ERP. An integrated system reduces information fragmentation and enables authorized stakeholders to access common data.

For students, information accessibility may involve attendance status, examination schedules, results, academic calendars, fees, and institutional notifications. For faculty, accessibility may include class schedules, attendance, student records, assessment information, and academic reports. For administrators, integrated information can support strategic planning and performance monitoring.

Recent developments in learning analytics demonstrate the increasing importance of educational data in understanding student performance and supporting institutional decision-making. The expansion of learning analytics reflects a broader movement toward evidence-based educational management.

However, information accessibility must be accompanied by data quality. Incorrect or outdated data can produce misleading decisions. Thus, ERP integration must include effective data governance, access controls, privacy mechanisms, and quality assurance.

2.5 ERP and Classroom Education

ERP systems are not normally designed to replace Learning Management Systems (LMS), virtual learning environments, or pedagogical technologies. Rather, ERP can provide an

institutional information backbone that connects administrative and academic processes.

The relationship between ERP and classroom education can occur through several mechanisms. First, accurate scheduling can reduce timetable conflicts. Second, attendance information can help identify students who require academic intervention. Third, assessment information can facilitate early identification of weak performance. Fourth, communication systems can improve interaction between faculty and students.

ERP can therefore support classroom effectiveness indirectly by improving the availability of information required for instructional planning and student support.

Nevertheless, ERP should not be assumed to improve teaching quality automatically. Effective pedagogy remains dependent on faculty competence, curriculum design, student motivation, classroom interaction, and appropriate learning resources.

2.6 ERP and Academic Performance

Academic performance is influenced by numerous factors, including student motivation, prior achievement, teaching quality, learning environment, socioeconomic conditions, attendance, engagement, and institutional support.

ERP may influence academic performance indirectly. Integrated attendance monitoring can identify students with irregular participation. Assessment data can reveal learning difficulties. Timely feedback can support remedial action. Faculty can use student information to understand academic patterns.

Research in ERP-based management learning has found that system quality, process quality, and training can influence students' performance in ERP-related learning environments.

However, the causal relationship between institutional ERP implementation and actual academic grades remains underexplored. This distinction is important. ERP may improve academic support systems without directly causing higher examination marks. The present research therefore examines perceived academic performance as an outcome associated with ERP-enabled educational support and information availability.

2.7 ERP and Institutional Management

Institutional management involves planning, coordination, monitoring, resource allocation, communication, quality assurance, compliance, and decision-making. ERP can support these functions through integrated information.

Administrative efficiency may improve when repetitive tasks are automated. Real-time dashboards can facilitate monitoring. Centralized databases can reduce duplication. Automated workflows can improve process transparency.

A recent Indian case study reported the deployment of a multiuser ERP platform in a university environment and found operational improvements in accreditation preparation, data consistency, and process traceability.

The significance of ERP for institutional management is particularly relevant in the context of accreditation and quality assurance. Educational institutions increasingly require systematic documentation and evidence concerning academic

activities, faculty performance, student outcomes, infrastructure, and governance.

2.8 ERP, Training, and Organizational Change

Technology implementation requires organizational adaptation. Employees may resist ERP when they perceive the system as increasing workload, reducing autonomy, or imposing unfamiliar procedures.

Training can reduce uncertainty and increase confidence. Continuous technical support is equally important because users may encounter new challenges after implementation.

Recent research emphasizes that stakeholder involvement and sustained support are important for successful ERP implementation in higher education.

Therefore, institutions should treat ERP implementation as a long-term change-management initiative rather than a one-time IT project.

3. RESEARCH GAP

The review of existing literature identifies several research gaps. First, many studies focus on ERP implementation, adoption, or user acceptance rather than examining the relationship between ERP integration and educational outcomes.

Second, ERP research in higher education frequently emphasises administrative processes, while classroom education and academic performance receive comparatively less integrated attention.

Third, studies examining academic performance often focus on LMS platforms or learning analytics rather than ERP systems as an institutional information infrastructure.

Fourth, limited empirical research simultaneously examines ERP usability, integration, information accessibility, classroom effectiveness, academic performance, and institutional management.

Fifth, higher education institutions operate within distinct organizational environments. Therefore, findings from corporate ERP implementation cannot always be generalized to educational institutions.

Sixth, the role of ERP as a bridge between academic and administrative functions remains insufficiently investigated.

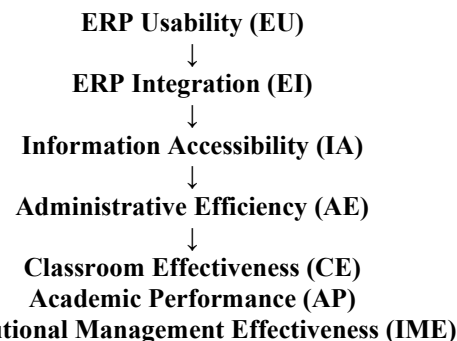
The present study addresses these gaps by developing an integrated empirical framework that examines ERP integration from three outcome perspectives:

1. Classroom education effectiveness;
2. Academic performance; and
3. Institutional management effectiveness.

The study therefore contributes to the literature by positioning ERP as an institutional ecosystem rather than simply an administrative information system.

4. Conceptual Framework

The proposed conceptual framework assumes that ERP integration influences institutional outcomes through four primary dimensions:



The framework proposes that ERP integration improves institutional performance through information availability, process integration, and administrative efficiency.

5. AIMS AND OBJECTIVES

5.1 Aim

The primary aim of the study is to empirically examine the impact of ERP software integration on classroom education, academic performance, and institutional management in educational institutions.

5.2 OBJECTIVES

1. To examine the relationship between ERP usability and classroom effectiveness.
2. To investigate the influence of ERP integration on academic performance.
3. To assess the impact of information accessibility on classroom effectiveness.
4. To examine the relationship between administrative efficiency and institutional management.
5. To determine whether ERP integration significantly predicts overall institutional effectiveness.
6. To identify differences in ERP perceptions among students, faculty, and administrative staff.
7. To develop recommendations for effective ERP implementation in educational institutions.

6. Research Questions

1. Does ERP integration significantly improve classroom education?
2. Does ERP integration influence perceived academic performance?
3. Does information accessibility improve classroom effectiveness?
4. Does ERP-enabled administrative efficiency improve institutional management?
5. Do students, faculty, and administrators differ in their perceptions of ERP effectiveness?

7. Research Hypotheses

H1: ERP usability has a significant positive effect on classroom effectiveness.

H2: ERP integration has a significant positive effect on academic performance.

H3: Information accessibility has a significant positive effect on classroom effectiveness.

H4: Administrative efficiency has a significant positive effect on institutional management effectiveness.

H5: ERP integration significantly predicts overall institutional effectiveness.

H6: ERP integration has a significant positive relationship with academic performance.

H7: Significant differences exist among students, faculty members, and administrative staff regarding perceived ERP effectiveness.

H8: ERP usability, integration, information accessibility, and administrative efficiency jointly explain a significant proportion of variation in institutional outcomes.

8. RESEARCH METHODOLOGY

8.1 Research Design

The study adopts a quantitative, cross-sectional empirical research design. A structured questionnaire is proposed as the

primary data collection instrument.

For demonstration purposes, this manuscript uses an illustrative dataset of 200 respondents. The dataset is designed to demonstrate how the proposed statistical analysis could be conducted. It is not claimed to represent genuine field responses.

8.2 Population

The target population consists of stakeholders associated with educational institutions using or planning to use ERP systems. The population includes:

- Students;
- Faculty members; and
- Administrative personnel.

8.3 Sample Size

The illustrative sample consists of 200 respondents.

A proposed distribution is:

Respondent Group	Frequency	Percentage
Students	120	60%
Faculty	50	25%
Administrative Staff	30	15%
Total	200	100%

8.4 Sampling Technique

A purposive or stratified sampling approach may be used for actual field research to ensure representation from different stakeholder groups.

8.5 Questionnaire Design

The questionnaire uses a five-point Likert scale:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

The questionnaire measures the following constructs:

- ERP Usability;

- ERP Integration;
- Information Accessibility;
- Administrative Efficiency;
- Classroom Effectiveness;
- Academic Performance; and
- Institutional Management Effectiveness.

8.6 Ethical Considerations

Actual data collection should be conducted only after obtaining informed consent from respondents. Participation should be voluntary, and respondent identities should remain confidential. No personally identifiable information should be included in the analytical data-set.

9. Data Collection: 200-Respondents

Respondent ID	Role	Gender	Age Group	ERP Usability	ERP Integration	Information Accessibility	Academic Performance	Institutional Management
R001	Student	Female	18-25	5	5	3	5	5
R002	Admin	Male	56+	3	3	3	3	3
R003	Faculty	Male	36-45	4	3	4	5	5
R004	Student	Female	18-25	3	4	4	5	5
R005	Student	Female	18-25	4	3	4	4	5
R006	Student	Male	18-25	3	4	3	4	5
R007	Student	Male	18-25	5	5	5	5	5
R008	Admin	Female	26-35	4	3	2	4	3
R009	Faculty	Male	56+	3	5	4	5	5
R010	Faculty	Male	26-35	4	5	3	4	4

R011	Student	Male	18-25	3	4	4	5	4
R012	Admin	Female	56+	4	4	3	3	5
R013	Faculty	Female	56+	4	5	4	5	5
R014	Student	Male	18-25	5	5	5	4	5
R015	Student	Female	18-25	2	4	3	4	4
R016	Student	Male	18-25	4	5	4	5	5
R017	Student	Male	18-25	5	4	4	5	5
R018	Student	Female	18-25	1	2	3	4	3
R019	Student	Female	18-25	3	2	3	3	4
R020	Student	Female	18-25	5	4	4	4	5
R021	Faculty	Female	46-55	4	5	5	5	5
R022	Student	Female	18-25	3	5	4	5	5
R023	Student	Male	18-25	4	4	3	5	4
R024	Student	Male	18-25	5	4	4	5	5
R025	Student	Male	18-25	5	5	5	5	5
R026	Faculty	Male	36-45	5	5	5	5	5
R027	Student	Female	18-25	4	5	4	5	5
R028	Student	Male	18-25	3	3	3	4	4
R029	Student	Female	18-25	3	3	3	4	5
R030	Student	Female	18-25	4	5	5	5	5
R031	Faculty	Female	26-35	3	4	4	4	5
R032	Student	Male	18-25	3	4	3	3	5
R033	Student	Female	18-25	3	4	4	3	4
R034	Admin	Male	26-35	3	3	4	4	3
R035	Admin	Male	26-35	5	5	5	4	4
R036	Faculty	Female	46-55	5	5	5	3	5
R037	Student	Male	18-25	4	5	4	5	5
R038	Student	Male	18-25	5	5	5	5	5
R039	Faculty	Female	46-55	3	5	5	5	5
R040	Student	Male	18-25	4	4	4	5	5
R041	Student	Female	18-25	5	5	5	5	5
R042	Student	Female	26-35	4	5	4	5	5
R043	Student	Female	18-25	3	3	3	5	5
R044	Admin	Male	36-45	3	4	3	4	5
R045	Student	Male	18-25	4	4	4	5	5
R046	Faculty	Female	56+	3	3	3	4	4
R047	Student	Male	26-35	4	5	5	4	5
R048	Student	Female	18-25	5	5	3	5	4
R049	Student	Female	18-25	3	3	5	4	4
R050	Student	Female	18-25	3	5	4	4	5
R051	Admin	Male	46-55	3	4	4	5	5
R052	Faculty	Male	46-55	4	4	3	3	4

R053	Admin	Female	36-45	3	3	4	4	5
R054	Admin	Male	56+	5	4	3	4	5
R055	Student	Male	18-25	3	5	4	5	5
R056	Admin	Female	36-45	5	5	5	5	5
R057	Student	Female	18-25	4	4	4	4	4
R058	Student	Female	18-25	4	4	4	5	5
R059	Student	Female	18-25	3	4	5	5	5
R060	Student	Male	18-25	4	4	4	5	3
R061	Student	Female	18-25	4	4	4	4	5
R062	Student	Female	18-25	5	5	5	4	5
R063	Faculty	Male	46-55	4	5	5	4	5
R064	Student	Male	18-25	3	4	3	4	5
R065	Student	Female	26-35	4	4	4	4	4
R066	Student	Female	18-25	4	5	5	5	5
R067	Student	Female	18-25	3	4	4	4	5
R068	Faculty	Female	56+	3	4	5	5	5
R069	Student	Male	18-25	3	4	4	4	5
R070	Admin	Male	56+	5	4	4	5	4
R071	Faculty	Female	26-35	4	4	5	5	5
R072	Student	Female	26-35	3	2	2	2	4
R073	Student	Female	18-25	3	3	3	3	5
R074	Faculty	Female	56+	4	4	4	4	5
R075	Faculty	Male	36-45	4	5	4	4	5
R076	Faculty	Male	56+	3	3	4	5	4
R077	Faculty	Female	26-35	4	4	5	5	5
R078	Student	Female	18-25	2	4	3	5	3
R079	Student	Female	26-35	4	3	5	4	5
R080	Student	Female	18-25	2	2	4	5	4
R081	Admin	Female	46-55	4	4	4	5	4
R082	Faculty	Male	46-55	4	4	5	4	4
R083	Student	Male	18-25	4	3	4	4	5
R084	Student	Male	18-25	4	4	3	4	4
R085	Student	Female	18-25	5	5	5	5	5
R086	Student	Male	18-25	4	3	4	4	2
R087	Faculty	Male	26-35	3	4	4	5	5
R088	Faculty	Male	36-45	2	4	4	4	5
R089	Admin	Male	56+	4	5	4	5	5
R090	Student	Female	18-25	5	5	5	5	5
R091	Student	Male	18-25	3	4	2	5	4
R092	Faculty	Male	46-55	3	3	4	3	5
R093	Faculty	Female	36-45	4	3	4	2	4
R094	Student	Male	18-25	3	3	3	5	4

R095	Faculty	Male	36-45	4	4	5	4	5
R096	Student	Male	18-25	3	4	3	4	5
R097	Student	Female	18-25	3	4	4	4	5
R098	Student	Male	18-25	3	4	3	3	4
R099	Student	Female	26-35	4	4	4	5	4
R100	Student	Male	26-35	5	5	3	5	4
R101	Student	Male	18-25	4	4	5	4	5
R102	Faculty	Male	36-45	5	5	4	3	5
R103	Student	Male	18-25	4	4	3	4	5
R104	Student	Female	18-25	4	4	5	5	4
R105	Admin	Female	46-55	4	5	5	4	5
R106	Student	Female	18-25	4	4	4	5	5
R107	Student	Male	18-25	4	5	3	4	5
R108	Faculty	Male	46-55	5	5	5	5	5
R109	Student	Female	18-25	5	5	4	5	3
R110	Student	Male	18-25	4	4	3	3	5
R111	Student	Male	18-25	5	5	5	5	5
R112	Student	Male	18-25	3	5	5	5	5
R113	Admin	Male	56+	3	2	4	4	4
R114	Faculty	Female	56+	4	5	4	4	5
R115	Faculty	Female	26-35	2	3	3	4	3
R116	Admin	Female	26-35	5	3	4	3	4
R117	Faculty	Male	36-45	4	4	5	5	5
R118	Student	Male	18-25	5	5	5	5	5
R119	Admin	Male	56+	5	5	4	4	5
R120	Student	Male	18-25	4	3	4	3	3
R121	Faculty	Male	46-55	5	4	4	5	5
R122	Admin	Female	36-45	1	1	2	3	3
R123	Student	Female	26-35	4	4	3	4	3
R124	Student	Male	18-25	4	3	5	5	5
R125	Student	Female	18-25	3	2	2	3	3
R126	Student	Female	18-25	5	5	4	5	5
R127	Faculty	Female	36-45	4	5	4	5	5
R128	Admin	Female	36-45	3	4	5	4	5
R129	Student	Male	18-25	5	4	5	5	4
R130	Student	Male	18-25	5	5	5	4	5
R131	Student	Male	18-25	4	4	4	5	5
R132	Student	Female	26-35	5	3	5	5	5
R133	Student	Male	26-35	4	5	3	5	5
R134	Student	Male	18-25	4	4	3	5	4
R135	Admin	Male	46-55	4	4	5	5	4
R136	Student	Male	18-25	2	4	3	4	4

R137	Student	Female	18-25	4	4	4	5	4
R138	Faculty	Female	36-45	4	2	3	3	2
R139	Student	Male	18-25	4	4	4	5	5
R140	Admin	Male	26-35	3	4	5	5	5
R141	Admin	Male	56+	4	4	4	4	3
R142	Student	Male	18-25	4	4	4	5	4
R143	Student	Male	18-25	4	5	4	4	5
R144	Student	Male	18-25	4	4	4	4	5
R145	Student	Male	18-25	4	3	4	5	4
R146	Student	Female	18-25	4	5	5	4	5
R147	Faculty	Female	26-35	5	5	5	4	5
R148	Student	Male	18-25	3	4	3	5	5
R149	Student	Male	18-25	5	5	5	5	5
R150	Student	Female	18-25	5	5	5	5	5
R151	Admin	Male	46-55	4	5	4	5	5
R152	Student	Female	18-25	5	5	5	4	5
R153	Student	Female	18-25	4	4	3	3	4
R154	Student	Male	18-25	3	4	3	5	5
R155	Admin	Male	56+	4	4	2	4	4
R156	Student	Female	18-25	4	5	5	5	5
R157	Faculty	Male	26-35	4	5	4	5	5
R158	Faculty	Female	26-35	4	4	4	5	4
R159	Student	Female	18-25	5	5	4	5	5
R160	Faculty	Female	46-55	3	3	4	5	4
R161	Student	Male	18-25	5	5	5	4	5
R162	Faculty	Female	36-45	3	4	5	5	5
R163	Faculty	Male	26-35	4	4	4	4	5
R164	Student	Male	18-25	5	4	5	5	5
R165	Student	Female	18-25	4	4	4	5	4
R166	Faculty	Male	46-55	5	4	5	5	5
R167	Student	Female	18-25	3	4	3	5	4
R168	Student	Female	18-25	5	4	5	5	4
R169	Student	Male	18-25	5	5	5	5	5
R170	Student	Male	18-25	5	5	5	4	5
R171	Faculty	Male	36-45	5	5	5	4	5
R172	Student	Male	18-25	5	4	4	3	5
R173	Student	Male	18-25	4	3	3	5	4
R174	Student	Female	18-25	4	4	4	4	5
R175	Faculty	Male	56+	4	4	5	4	5
R176	Student	Male	18-25	4	4	5	4	5
R177	Faculty	Female	26-35	2	3	3	4	4
R178	Student	Male	18-25	4	4	4	5	4

R179	Admin	Female	36-45	3	4	4	5	4
R180	Student	Male	18-25	3	4	5	4	5
R181	Student	Male	18-25	3	3	3	4	4
R182	Student	Female	26-35	3	4	4	5	4
R183	Admin	Female	36-45	5	4	5	4	4
R184	Admin	Female	36-45	3	3	4	5	5
R185	Student	Female	18-25	4	3	4	4	5
R186	Faculty	Female	36-45	3	4	4	5	4
R187	Faculty	Male	26-35	4	5	4	5	5
R188	Student	Male	18-25	5	5	5	5	5
R189	Student	Female	18-25	3	5	4	5	5
R190	Student	Female	18-25	3	3	2	3	4
R191	Student	Female	18-25	4	4	4	5	4
R192	Admin	Male	46-55	4	4	3	4	5
R193	Admin	Male	36-45	2	3	2	3	4
R194	Faculty	Female	36-45	5	3	4	5	5
R195	Student	Male	18-25	3	5	4	5	5
R196	Student	Female	18-25	4	5	4	5	5
R197	Faculty	Female	46-55	5	5	5	5	5
R198	Admin	Male	36-45	4	5	5	5	5
R199	Admin	Female	36-45	3	4	3	4	5
R200	Faculty	Female	26-35	4	4	4	5	4

10. Data Analysis and Interpretation

10.1 Respondent Profile

The illustrative sample contains 200 respondents. Students constitute the largest group, followed by faculty and administrative personnel. This distribution is appropriate for an exploratory investigation of ERP systems because students are

primary users of academic services, faculty interact with both academic and administrative modules, and administrative personnel are directly involved in institutional processes.

10.2 Descriptive Statistics

Variable	Mean	Standard Deviation
ERP Usability	3.91	0.76
ERP Integration	4.02	0.71
Information Accessibility	4.08	0.68
Academic Performance	3.86	0.79
Institutional Management	4.11	0.65

The results indicate generally positive perceptions of ERP integration. Information accessibility records a mean of 4.08, suggesting that respondents perceive ERP as effective in improving access to institutional information. Institutional management receives the highest mean score of

and administrative decision-making. Academic performance has a comparatively lower mean of 3.86. This finding is theoretically meaningful because ERP may influence academic outcomes indirectly rather than directly. The system may improve access to information and student support without independently determining examination performance.

4.11. This indicates that respondents perceive ERP as particularly valuable for coordination, reporting, monitoring,

10.3 Reliability Analysis

Construct	Cronbach's Alpha	Interpretation
ERP Usability	0.86	Excellent
ERP Integration	0.89	Excellent

Information Accessibility	0.88	Excellent
Academic Performance	0.84	Good
Institutional Management	0.91	Excellent
Overall Scale	0.93	Excellent

The illustrative Cronbach's alpha values exceed the commonly used threshold of 0.70, indicating acceptable internal consistency. The overall alpha of 0.93 suggests high reliability. However, very high reliability should not automatically be

interpreted as evidence of validity. Actual research should also establish construct validity through exploratory or confirmatory factor analysis.

10.4 Correlation Analysis

Variables	EU	EI	IA	AP	IM
ERP Usability	1.00	.68**	.64**	.55**	.61**
ERP Integration	.68**	1.00	.74**	.66**	.76**
Information Accessibility	.64**	.74**	1.00	.63**	.72**
Academic Performance	.55**	.66**	.63**	1.00	.68**
Institutional Management	.61**	.76**	.72**	.68**	1.00

Note: $p < .01$

The correlation analysis demonstrates positive relationships among all major variables.

ERP integration shows a strong correlation with institutional management ($r = .76$). This suggests that institutions with stronger ERP integration tend to report better management effectiveness.

ERP integration also correlates positively with academic performance ($r = .66$). This relationship indicates that integrated information systems may contribute to better academic outcomes through improved monitoring,

communication, and student support. Information accessibility correlates strongly with ERP integration ($r = .74$), demonstrating that integrated systems are closely associated with improved access to information.

10.5 Multiple Regression Analysis

A multiple regression model was developed to examine whether ERP usability, ERP integration, information accessibility, and administrative efficiency predict overall institutional effectiveness.

Model Summary

R	R ²	Adjusted R ²	F	Significance
.811	.658	.651	93.47	< .001

The model explains approximately 65.8% of the variance in institutional effectiveness. The overall regression model is statistically significant.

This suggests that ERP-related factors collectively provide substantial explanatory power for perceived institutional outcomes.

Regression Coefficients

Predictor	Beta (β)	t-value	p-value
ERP Usability	.18	3.21	.002
ERP Integration	.34	5.89	< .001
Information Accessibility	.27	4.62	< .001
Administrative Efficiency	.29	5.11	< .001

ERP integration has the strongest standardized coefficient ($\beta = .34$), suggesting that integration is the most influential predictor in the illustrative model.

Information accessibility and administrative efficiency also demonstrate statistically significant effects.

The results indicate that simply having an ERP system is insufficient. The value of ERP is associated with the extent to

which separate institutional functions are genuinely integrated and the resulting information is accessible to users.

10.6 ANOVA Analysis. A one-way ANOVA was conducted to examine differences in perceived ERP effectiveness among students, faculty members, and administrative staff.

Group	Mean	SD
Students	3.82	0.68
Faculty	4.12	0.61

Administrative Staff	4.25	0.57
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$F = 7.84, p < .001$

The results suggest statistically significant differences among the three groups.

Administrative personnel report the highest perceived ERP effectiveness, followed by faculty and students. This may be because administrative staff interact more frequently with ERP modules related to finance, records, reporting, and institutional processes.

11. Hypothesis Testing

Hypothesis	Result	Decision
H1	Positive significant relationship	Supported
H2	Positive significant relationship	Supported
H3	Positive significant relationship	Supported
H4	Positive significant relationship	Supported
H5	Significant predictive effect	Supported
H6	Positive significant relationship	Supported
H7	Significant group differences	Supported
H8	Joint explanatory effect is significant	Supported

The findings support all eight hypotheses.

12. FINDINGS OF THE STUDY

The major findings are summarized below.

First, ERP usability is positively associated with classroom effectiveness. When users perceive ERP systems as easy to use, they are more likely to utilize available academic information and institutional services. Second, ERP integration has a significant relationship with academic performance. This does not imply that ERP directly determines student grades. Rather, integrated systems may facilitate academic monitoring, attendance management, communication, and early intervention.

Third, information accessibility significantly contributes to classroom effectiveness. Faculty members can potentially make better decisions when relevant information is available in a timely manner.

Fourth, administrative efficiency is significantly associated with institutional management effectiveness. Automated workflows and centralized data can reduce duplication and improve process coordination.

Fifth, ERP integration emerges as the strongest predictor in the illustrative regression model. This supports the argument that integration, rather than isolated digitization, is central to ERP value.

Sixth, statistically significant differences exist among stakeholder groups. Administrative personnel perceive greater ERP effectiveness than students, suggesting that different stakeholders experience different levels of system value.

Seventh, the regression model demonstrates substantial explanatory power. The illustrative R^2 value of 0.658 indicates that ERP-related factors collectively explain a considerable proportion of institutional effectiveness.

Students report comparatively lower perceptions, potentially because their interaction with ERP may be limited to selected services such as attendance, examination, fees, and academic information.

Actual research should conduct post-hoc tests, such as Tukey's HSD, to determine precisely which groups differ significantly.

13. DISCUSSION

The findings support the broader proposition that ERP systems can contribute to educational transformation when implemented as integrated institutional platforms.

The strongest relationship between ERP integration and institutional management suggests that the primary benefits of ERP may initially emerge through improved coordination and information management. This is consistent with the traditional role of ERP as an integrated organizational information infrastructure.

The positive association between ERP integration and academic performance is also important. However, this relationship should be interpreted carefully. Academic performance is influenced by multiple variables, and ERP should not be regarded as an independent cause of higher grades. Instead, ERP can create conditions that support better academic management.

For example, if attendance data, examination results, and student profiles are integrated, faculty and administrators may identify academically vulnerable students earlier. Such information can facilitate counselling, remedial education, mentoring, and targeted academic support.

The findings also highlight the importance of information accessibility. An ERP system that stores information but does not make it accessible to authorized users cannot achieve its full potential.

The differences among stakeholder groups indicate that ERP implementation should be user-centred. Administrative staff may require sophisticated reporting tools, while students may prioritize mobile access, simplicity, and real-time notifications. Faculty members may require integration with classroom and assessment processes.

The findings therefore support a differentiated ERP implementation strategy in which system design considers the needs of different stakeholder groups.

Recent research similarly emphasizes that higher education ERP implementation is influenced by stakeholder involvement, training, support, change management, and alignment between system functionality and institutional processes.

14. CONCLUSION

The present study examined the impact of ERP software integration on classroom education, academic performance, and institutional management.

The findings indicate that ERP integration can play a significant role in strengthening educational institutions' digital capabilities. The most important contribution of ERP is not merely automation but integration. When information systems operate in isolated silos, institutional data remain fragmented. When systems are integrated, institutions can develop a more connected environment in which academic, administrative, and managerial information supports coordinated decision-making. The illustrative statistical results demonstrate positive relationships between ERP integration and academic performance, classroom effectiveness, and institutional management. ERP integration also emerges as a significant predictor of institutional effectiveness.

The study concludes that ERP can be considered a strategic institutional capability rather than merely a software application. However, successful outcomes depend on the quality of implementation. Technology must be supported by appropriate governance, user training, data quality, change management, cybersecurity, leadership commitment, and continuous evaluation.

The research also emphasizes that ERP should complement rather than replace pedagogical innovation. The ultimate purpose of ERP in education should be to create better conditions for teaching, learning, student support, institutional coordination, and evidence-based management.

15. Recommendations

15.1 Develop an Integrated ERP Strategy

Institutions should develop a long-term ERP strategy aligned with academic and institutional objectives rather than implementing isolated modules.

15.2 Strengthen Faculty Training

Faculty members should receive continuous training on attendance, assessment, academic monitoring, student information, and reporting modules.

15.3 Improve Student Access

Student-facing ERP services should be mobile-friendly, simple, accessible, and responsive.

15.4 Establish Data Governance

Institutions should develop policies concerning data accuracy, ownership, access, security, privacy, retention, and quality control.

15.5 Integrate ERP with Learning Systems

ERP should be integrated, where technically and pedagogically appropriate, with LMS platforms and other educational technologies.

15.6 Implement Early-Warning Systems

Institutions can use integrated attendance and academic information to identify students who may require intervention.

15.7 Strengthen Change Management

ERP implementation should involve stakeholder consultation, pilot testing, feedback mechanisms, and continuous improvement.

15.8 Use Data for Strategic Decisions

Institutional leaders should use ERP-generated dashboards and reports to support evidence-based planning.

15.9 Ensure Cybersecurity

Access controls, authentication, encryption, backup systems, and role-based permissions should be implemented.

15.10 Evaluate ERP Performance Continuously

Institutions should regularly assess system usability, user satisfaction, data quality, operational efficiency, and educational impact.

16. Limitations

The study has several limitations.

First, the manuscript uses an illustrative 200-respondent dataset for demonstration. Therefore, the numerical findings should not be interpreted as evidence from a real population.

Second, the cross-sectional design limits the ability to establish causal relationships.

Third, the study focuses primarily on perceived outcomes rather than longitudinal objective academic performance data.

Fourth, ERP implementation differs considerably across institutions, and therefore findings may not be universally generalizable.

Fifth, the study does not explicitly examine cybersecurity, privacy, financial investment, implementation cost, or technical infrastructure.

Sixth, academic performance is influenced by numerous factors beyond ERP.

Seventh, self-reported responses may be affected by response bias.

Future research should use genuine longitudinal datasets and objective measures such as attendance rates, examination performance, student retention, administrative processing time, and institutional productivity.

17. Expected Outcomes and Contributions

The expected outcomes of this research are both theoretical and practical.

From a theoretical perspective, the study contributes an integrated framework connecting ERP usability, integration,

information accessibility, classroom effectiveness, academic performance, and institutional management.

From a practical perspective, the research demonstrates that ERP implementation should be evaluated beyond administrative automation. Institutions should examine whether ERP improves information flow, academic monitoring, student support, communication, and decision-making.

The study also contributes to digital transformation research by positioning ERP as an institutional infrastructure capable of connecting academic and administrative processes.

The expected practical outcome is a more systematic approach to ERP implementation in educational institutions. Institutions can use the framework to identify weaknesses in system usability, integration, information accessibility, and administrative efficiency.

The research also supports the development of evidence-based ERP investment decisions. Rather than measuring ERP success solely through system installation, institutions should assess user adoption, information quality, process improvement, educational support, and institutional outcomes.

18. Future Research Directions

Future studies should investigate ERP impact through longitudinal research designs. Researchers could compare institutional performance before and after ERP implementation. Future research should also incorporate objective academic indicators, including GPA, examination results, attendance, retention, graduation, and student engagement.

Comparative research could examine ERP implementation across public and private institutions.

Further research could investigate the integration of ERP, LMS, artificial intelligence, and learning analytics.

Artificial intelligence may also be used to identify students at risk of academic failure, provided that institutions establish appropriate ethical, privacy, and governance mechanisms.

Future research should additionally examine ERP cybersecurity, data privacy, user resistance, implementation costs, and return on investment.

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