

International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 ∺ Peer-reviewed & Refereed journal ∺ Vol. 14, Issue 5, May 2025 DOI: 10.17148/IJARCCE.2025.14565

Exploring the Implementation of ERP with a Feedback Module in Higher Education: A Case Study

Sayli Patil^{1*}, Sakshi Wagh², Sakshi Jadhav³, Radhika Ghadage⁴, Pratiksha Suryawanshi⁵,

Priti Jagtap⁶

Assistant Professor, Department of Computer Science, Nowrosjee Wadia College (Autonomous), Pune,

Maharashtra, India^{1*}

Student, Department of Computer Science, Nowrosjee Wadia College (Autonomous), Pune, Maharashtra, India²⁻⁶

Abstract: Higher education institutions depend on Enterprise Resource Planning (ERP) systems to sequence academic operations alongside administrative functions as well as execute data enhancement and guide institutional decision outputs. The primary intention of this study assesses Enterprise Resource Planning (ERP) adoption patterns along with technical hurdles during implementation as well as protective measures together with modern technology adoption within higher education institutions. The study evaluates multiple success factors which include user acceptance together with leadership involvement followed by specific system customization and full training programs.

Enterprise Resource Planning(ERP) systems require improved security measures together with system efficiency gains and innovative technology implementation of cloud computing along with artificial intelligence and blockchain. Educational institutions can use cloud-based Enterprise Resource Planning (ERP) technologies to improve their operation efficiency at a lower cost than achieve superior student learning outcomes with Al-driven automation systems. In this paper we present an implementation of a dedicated feedback module within an existing ERP system at a higher education institution.

Keywords: ERP, Educational Framework, Artificial Intelligence, Cloud computing, LMS

I. INTRODUCTION

Higher education institutions depend on Enterprise Resource Planning (ERP) systems as their main instruments to handle digital transformation. Enterprise Resource Planning (ERP) systems combine major university operations including academic planning and admissions functions and human resources and financial management into an integrated platform. Simplification of administrative work together with improved department communication and coordination occurs through this integrated platform. The combination of Enterprise Resource Planning (ERP) system implementation with better error reduction capabilities and data-based decision systems allows higher education institutions to reach operational productivity levels.

ERP system management becomes easier for managers through the implementation of innovations, including cloud computing and artificial intelligence and blockchain features. Cloud computing enables organizations to achieve cost efficiency through its use. The combination of artificial intelligence technologies supports university personnel to handle data more effectively while delivering clearer system operations. Institutional technology developments enable better management of systems as well as enhanced decision-making speed.

This paper examines contemporary research with technological advancements to illustrate the modern developments of ERP applications in education. This research examines 25 to 30 research papers that study Enterprise Resource Planning (ERP) implementation in education institutions. The research presents both favorable aspects alongside institutional challenges and reveals necessary success elements for meaningful results. The paper is organized as follows. Next section II is primarily focused on background and related work. Section III presents the design and implementation details. The result analysis is presented in section IV. The paper ends with a conclusion and future scope.

International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 😤 Peer-reviewed & Refereed journal 😤 Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

II. BACKGROUND AND RELATED WORK

The research examines both student and business-related aspects of Enterprise Resource Planning (ERP) systems adoption together with their implementation processes in HEIs(Higher Education Institutions). Forward integration of academics with administrative and financial functions helps educational institutions achieve better operational efficiency and automated data management and enrollment and fee transaction processes [5][8]. However, ERP implementation faces challenges, including high costs, resistance to change, and inadequate training, leading to a high failure rate in HEIs(Higher Education Institutions) [4][24]. The implementation of ERP(Enterprise Resource Planning) systems succeeds when higher management supports the project while stakeholders participate and employees receive training and the system receives customization [4].

AI analytics together with cloud computing as well as LMS (Learning Management System) integration offer prospects to improve system usability into the future [27]. For successful implementation of enterprise resource planning systems and continuous assessment both require proper structure [5][24]. The level of expectations that students have regarding innovation adoption directly impacts both ERP (Enterprise Resource Planning) acceptance and summarized academic metrics [6]. Academic records require strong protective protocols according to current security framework requirements [18]. The adoption of proper training methods together with user acceptance create positive effects on both planning processes and performance achievements [20].Rather than other models the implementation of ERP(Enterprise Resource Planning) depends on cultural elements together with organizational factors and technological aspects [16]. Real-time access as well as scalability becomes possible through integration with Blockchain, IoT, and cloud environments [3]. The implementation of Enterprise Resource Planning(ERP) systems enables education institutions to improve their processes and manage data and plan their activities [21] but educational organizations still face implementation obstacles stemming from costs as well as technological skills deficits and staff resistance [21]. Different aspects measure system performance including statistics about application use along with operational effectiveness and end-user contentment [22]. True success in ERP development depends on three elements: customized systems, developmental stages implemented sequentially, and continuous stakeholder involvement [7]. The provision of training combined with support systems results in superior education results [15]. Cloud ERP(Enterprise Resource Planning) provides organizations with flexible solutions coupled with financial benefits that result from proper support from both internal staff and vendor networks [11]. The expensive nature of traditional ERP systems prevents SMEs from using them yet cloud-based solutions provide affordable resources for access [14]. ERP enhances operational decision making while introducing social consequences including workload modifications that require explicit training and change implementation procedures [12]. User acceptance builds upon system quality together with usability features as well as usefulness and strong leadership support [10]. ERP Challenge has proven effective in student training through its use of Microsoft Dynamics NAV and business simulations and learning modules as a hybrid e-learning platform [26].

A. Limited Real-Time Implementation and Experimental Studies

Young researchers continue to study theoretical models instead of conducting real-time pilot implementations utilizing survey methods. Future research needs to implement proposed frameworks in educational settings so scientists can validate their actual effectiveness.

Lack of Comparative Studies

• Few studies compare ERP adoption across different regions or institutions with varying technological infrastructures.

• A comprehensive investigation among different institutions would reveal the impact of environmental elements on ERP implementation alongside protective measures.

B. Integration Challenges of Emerging Technologies

Experienced researchers often recommend Blockchain, Internet of Things (IoT) and Artificial Intelligence (AI) for Enterprise Resource Planning(ERP) enhancement yet their integration requirements in real-life solutions remain unknown. As a future approach researchers should conduct prototype development in combination with performance evaluation tests to verify the integrated system's practical implementation potential.

C. Human-Centric Usability and Adoption Analysis

The scholarly research on Enterprise Resource Planning (ERP) adoption does not concentrate on usability elements which incorporate user experience characteristics.

A combined analysis of usability evaluation and user behavior should be conducted in one research study to maximize improvements in ERP interface design and operational functionality. Future research must fill these gaps for achieving detailed information about ERP system adoption processes coupled with educational and security developments in enterprise technologies.

IJARCCE

International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 i Peer-reviewed & Refereed journal i Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

III. ERP IN EDUCATION: A CASE STUDY

Several researchers developed conceptual and analytical models which improved ERP (Enterprise Resource Planning) system implementations through the integration of modern technologies including Blockchain and IoT (Internet of Things) and Cloud Computing.



Figure.1 Modular architecture of ERP in Education

An Educational Enterprise Resource Planning (ERP) system ensures centralized operation of institutional academic and administrative systems as well as educational communication processes. Figure.1 shows the general modular architecture of ERP in higher education which includes: Attendance, Feedback, CMS (Content Management System), Leave Management, Exam and Placement.

3.1 SYSTEM ARCHITECTURE:

In this paper, we present an implementation of a feedback module using technologies like React.js, Node.js, Tailwind CSS, and MySQL Workbench to demonstrate a practical application of Enterprise Resource Planning (ERP).

The architecture diagram of ERP in higher education is as shown in figure 2.



Figure 2.Architecture of ERP system Feedback Module



International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 😤 Peer-reviewed & Refereed journal 😤 Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

The system follows a three-tier architecture, with the frontend and backend communicating locally without relying on external servers.

1. Frontend Layer (User Interface):

• Built using **React.js** and **Tailwind CSS** to create a modern, responsive, and user-friendly interface.

• Includes pages for submitting feedback, viewing submitted feedback, admin review of feedback and report visualization.

2. Backend Layer (Application Logic):

- Developed using **Node.js** and **Express.js**, running locally on the client or server machine.
- Handles feedback form submissions, data validation, and retrieval for display or analysis.

3. Database Layer:

- **MySQL** is used as the database, installed and configured on the server machine.
- Stores feedback entries, user identifiers, timestamps, and administrative responses.

The Feedback Module facilitates a two-way communication system between stakeholders of the institution — students, teachers, and parents. Users have the capability to offer formal and informal insights about various features of educational environments throughout the institution. The institution gains essential details from feedback which allows it to discover its strong points as well as weak points. The system makes use of Natural Language Processing to analyze feedback through sentiment analysis which allows the identification of tone and feedback nature. The module functions as an essential component in institutional growth because it develops the capacity for ongoing developmental adjustments.

Key Features: Users can give feedback anonymously combined with feedback options for courses and faculty members along with facilities while sentiment analysis through AI technology is optional and visual feedback reports are available.

User Access: Student & Parents: Submit feedback and Teacher/Admin: View and analyze feedback.

IV. RESULT AND DISCUSSION

The following figures show the performance analysis for the Feedback module of ERP management system.



Figure-3 Initial Login Interface with Role Selection

472



International Journal of Advanced Research in Computer and Communication Engineering Impact Factor 8.102 ∺ Peer-reviewed & Refereed journal ∺ Vol. 14, Issue 5, May 2025 DOI: 10.17148/IJARCCE.2025.14565



Figure-4 Student Dashboard



Figure-5 Subject-wise feedback form with 'Give Feedback' options for each subject



International Journal of Advanced Research in Computer and Communication Engineering Impact Factor 8.102 ∺ Peer-reviewed & Refereed journal ∺ Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565



Figure-6 Feedback Questionnaires For students



International Journal of Advanced Research in Computer and Communication Engineering Impact Factor 8.102 ∺ Peer-reviewed & Refereed journal ∺ Vol. 14, Issue 5, May 2025 DOI: 10.17148/IJARCCE.2025.14565



Figure-7 Viewing Submitted Feedback

S 🕼 🗖 🖲 NWC Pune	× +				- D	×
← C ① localhost:5173/dashb	oard/home			Q A ☆ 𝔅 I Φ	ć 🕀 🗞 …	•
🛅 Dell 📋 New Tab 🛛 M Gmail 🔼 YouTu	ube 💡 Maps 峰 Translate	tos Xplore 🔐 Ultimatix - I	Digitally 🔕 Scheduledata	🥨 Webex Events (class	> Conter favorites	Q
Modern Education Society's Nowrosjee Wadia College, Pune (Autonomous)	board / Home Ie				≎ ⊖ ⊕	•
Home MASTERS						±¥
🚔 Student Master						0
🚔 Staff Master		WELCON	ME TO NWC E	RP PORTAL		
🚔 Parenta Master	Total Students	Total Teachers	Total Staff	Total Alumni		
FEEDBACKS	105	28	14	228		+
Teacher Feedback	Total Parents iii 116	Total Courses 前 2				
			© 2024, Nowrosjee Wadia College,	Pune		ŝ
Humid Now	Q Search	<i>(</i>) 🐔 🖬	e 🖻 🖬 🤇	👂 🜉 🔺 🔷 😂	ENG 🛜 🗘 🗈 08:25 IN 🛜 🗘 🗈 11-07-2024	Q

Figure-8 ERP Portal



International Journal of Advanced Research in Computer and Communication Engineering Impact Factor 8.102 ∺ Peer-reviewed & Refereed journal ∺ Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565



Figure-9 Analysis reports for Teachers feedback form

This report (Figure-9) summarizes student evaluations of teaching performance, focusing on clarity, engagement, and subject knowledge. A majority of the feedback was positive (60%), with 35% neutral responses and 5% indicating negative experiences. These insights help guide targeted faculty improvements.



Figure-10 Analysis reports for Subjects Feedback



International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 $\,\,st\,$ Peer-reviewed & Refereed journal $\,\,st\,$ Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

The analysis of student responses in above figure-10 report aims to identify strengths and opportunities for enhancement in the academic program and it indicates that overall, student feedback averages around 72.33% positive, 21.33% neutral, and 6.67% negative.



Figure-11 Student Feedback on Data Structure subject

This report summarizes student feedback on the Data Structure subject (Figure-11), highlighting areas of clarity, engagement and explanation quality. A significant portion of the students 50% reported that the subject was well explained, while 30% expressed that they were satisfied with the topic. However 10% of students indicated a need for improvement and 5% requested more examples. Another 5% provided no response. These insights help identify strengths in teaching delivery and clarity of content.

V. CONCLUSION AND FUTURE SCOPE

Enterprise Resource Planning (ERP) systems integrated into academic institutions represent a major progress in educational management operations. The system features accomplish workflow automation and improve departmental transparency as well as communication and decision-making capabilities.

The review demonstrates how Enterprise Resource Planning (ERP) systems establish themselves as essential strategic tools which bring alignment between educational operations and contemporary educational needs. Enterprise Resource Planning (ERP) systems need a detailed implementation strategy that includes assessment of needs, user education and ongoing assessment to help achieve implementation success with vendor partnership. Enterprise Resource Planning (ERP) systems will experience new innovation potential along with enhanced educational results through artificial intelligence and machine learning maturity development.

The field requires future research to determine Enterprise Resource Planning(ERP) system effects on student achievement results alongside developing budget-oriented scalability models and privacy/security and user interface implementation guidelines. Implementing a robust feedback module within an ERP system can ultimately lead to more informed strategic planning and a more adaptive and responsive organization.

Research going forward should explore:

• The effectiveness of Artificial Intelligence (AI) and Machine Learning (ML) in Enterprise Resource Planning (ERP) data analysis and decision-making.

Customization techniques to align Enterprise Resource Planning (ERP) with unique institutional workflows.

• Enhanced mobile Enterprise Resource Planning (ERP) interfaces to support remote learning and administrative flexibility.



International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 😤 Peer-reviewed & Refereed journal 😤 Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

• The long-term impact of Enterprise Resource Planning (ERP) integration on academic performance, accreditation, and institutional rankings.

Strategic action in combination with technological innovation, empowerment of users and continuous evaluation of Enterprise Risk Management (ERM) will be crucial to achieve the full potential of ERP systems in education.

REFERENCES

- [1]. Dr.G.Yashodha, USAGE OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION, September 2024
- [2]. Mercy Bolanle, Mark J. Keown, Chris Chriss, Adoption of enterprise resource planning (ERP) systems and cloudbased accounting software, August 2024
- [3]. Samah Hassan, Bayan Elakhdar, Warda Mustafa Saied, Duaa Gamal Hassan, Leveraging new Technologies for Building a Comprehensive Smart MIS: Integrating ERP, Blockchain, IoT, Context-awareness, and Cloud Computing, 2024
- [4]. Jasmin Fattah-Weil, Paving the way for ERP Implementation in Higher Education Institutions A Review of Critical Success Factors, 2024
- [5]. Dr. G.S. Vijaya, Kiruthiga G, Benefits of ERP implementation and its usage to the Students in higher education institutes in India, 07-July-2023
- [6]. Budi Septiawan, Ayatulloh Michael Musyaffi, Martin Quinn, Ifa Ratifah, Technology readiness in enterprise resource planning gamification to improve student learning outcomes, Apr 7, 2023
- [7]. Ali H. Al-Badi, Ashar Khan, Enterprise Resource Planning Systems Development in Omani Higher Education Institutions from the Perspectives of Software Project Managers and Developers, June 2022
- [8]. Arjun Singh, Karan Singh, ERP Systems and Their Importance for Implementation at Educational Institutions, 20-04-2022
- [9]. R. Tamilkodi, K. Valli Madhavi, Shrija Madhu, B. Sujatha, Academic Feedback System Automation for an Educational Organization, December 2022
- [10]. Maram Abdulrahman Almalki, Yanbu University College, Saudi Arabia Randa Almohammadi, Yanbu University College, Saudi Arabia Esraa Alharbi, Yanbu University College, Saudi Arabia, User Acceptance of Enterprise Resource Planning (ERP) Systems in Higher Education Institutions: A Conceptual Model, October-December 2021
- [11]. quadri noorulhasan naveed saiful islam, mohamed rafik noor mohamed qureshi, ali m. Aseere, mohammed aref abdul rasheed, and sadaf fatima, Evaluating and Ranking of Critical Success Factors of Cloud Enterprise Resource Planning Adoption Using MCDM Approach, November 19, 2021
- [12]. Shalini Tiwari, 2Dr. NitinKalla, A study on the impact of ERP implementation and Adoption in the Higher Education Institutions, August 2021
- [13]. Mohammed Albarghouthi, ERP Adoption and Acceptance in Saudi Arabia Higher Education: A Conceptual Model Development, 2020
- [14]. Abdulfattah Omar, The social impacts of ERP implementation on employees and work environments in higher education institutions, July 2020
- [15]. Carlos J. Costa, Manuela Aparicio, Joao Raposo, Determinants of the management learning performance in ERP context, 06-2020
- [16]. Mohammad Samir Abdel-Haq, Conceptual Framework for Developing an ERP Module for Quality Management and Academic Accreditation at Higher Education Institutions: The Case of Saudi Arabia, 2020
- [17]. Ahmad Al Thunibat, Bassam Al-Mahadeen, Feras Al-tarawneh, The Acceptance of using Enterprise Resource Planning (ERP) System in Higher Education: A Case Study of Jordanian Universities, April 2019
- [18]. Hafsa Ashraf, Mamdouh Alenezi, Muhammad Nadeem, Yasir Javid, Security assessment framework for educational ERP systems, December 2019
- [19]. Mohammed Albarghouthi, Baomin Qi, T Chengbo Wang, Muneer Abbad, ERP Adoption and Acceptance in Saudi Arabia Higher Education: A Conceptual Model Development 201910-26.
- [20]. Ahmad Saleh Shatat, The Impact of ERP System on Academic Performance: A Case Study Approach, 27 May 2019
- [21]. Mr.Akshay R Nair, Ms.Anitta Lukose, Ms, Akhila A Sasikumar, Ms. Rachel Mathew George Mr. Rahul Ajithkumar(Guide) Dept of CSE, Implementation of ERP for Educational Institutions, May 2019
- [22]. khuram shafi, uqba saeed ahmad, samina nawab, waqas khaliq bhatti, shafqat ali shad, zartashia hameed, tahira asif, and fatima shoaib, Measuring Performance Through EnterpriseResource Planning System Implementation, January 8, 2019
- [23]. M. Taghavi, H. Hashemi, ERP Systems in Higher Education Institutions: Review of the Information Systems and ERP Modules, July 2018

478

International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.102 $\,\,st\,\,$ Peer-reviewed & Refereed journal $\,\,st\,\,$ Vol. 14, Issue 5, May 2025

DOI: 10.17148/IJARCCE.2025.14565

- [24]. Domicián Máté, Zoltán Bács, Viktor László Takács, Analyzing the implementation of an ERP system by Selfassessment in higher education, November 2, 2017
- [25]. Abrar Ullah, Rohaizat Bin Baharun, Khalil MD Nor, Muhammad Yasir, Overview of Enterprise Resource Planning (ERP) System in Higher Education Institutions (HEIs),2017
- [26]. Florian Schwadea, Petra Schuberta, The ERP Challenge: An Integrated E-learning Platform for the Teaching of Practical ERP Skills in Universities, October 2016
- [27]. R. Addo-Tenkorang and P. Helo, Enterprise Resource Planning (ERP): A Review Literature Report, October 19-21, 2011