

A STUDY ON THE EFFECTIVENESS OF COLLEGE ERP SYSTEM IN HIGHER EDUCATION INSTITUTIONS

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Abstract-Technology has completely transformed every element of life in the modern digital age, including education. Enterprise resource planning (ERP) systems are being used more frequently by higher education institutions to handle their administrative and academic tasks. This study aims to assess how well college ERP systems contribute to higher education institutions' increased productivity and effectiveness. The study employs a mixed-methods approach and includes interviews with important stakeholders in addition to a survey of students, teachers, and staff. The study's findings demonstrate that college ERP systems significantly increase the efficacy and efficiency of higher education institutions. Improvements are made in several areas as a result of the implementation of ERP systems, including student enrollment, course scheduling, academic record-keeping, and financial administration. The study also shows that using ERP systems enhances stakeholder engagement and communication, which enhances overall institutional performance and decision-making. The study does, however, also point out a number of difficulties that organizations have in utilizing and deploying ERP systems. These difficulties include technical difficulties, a lack of education, opposition to change, and worries about data security. According to the report, colleges should deploy ERP systems thoroughly, particularly by offering sufficient training and assistance, responding quickly to technological problems, and maintaining data security. Overall, the study comes to the conclusion that college ERP systems are a useful tool for overseeing academic and administrative tasks in higher education establishments. However, a number of factors, such as good implementation, enough training, and resolving technical and security issues, affect how effective they are.

Key Words: College ERP System, Higher Education Institutions, Efficiency, Effectiveness, Implementation, Challenges.

I. INTRODUCTION

Technology has completely transformed every part of our lives in the current digital era, and education is no exception. Enterprise resource planning (ERP) systems are being adopted by more and more higher education institutions to manage and streamline their administrative and academic tasks. From student enrollment and course scheduling to academic record-keeping and financial administration, these

sophisticated systems provide a thorough and integrated approach to managing many elements of college operations. By centralizing data and automating processes, ERP systems give colleges a powerful tool to streamline operations, increase efficiency, and make informed decisions based on accurate and real-time information. Additionally, ERP systems facilitate better communication and collaboration among stakeholders, including administrators, and faculty. This study's goal is to evaluate how college ERP systems affect the efficiency and productivity of higher education institutions. We intend to get a thorough understanding of the advantages and challenges connected with the adoption and utilization of ERP systems in the college context by using a mixed-methods approach that combines interviews with key stakeholders and a survey of students, teachers, and staff. The results of this study, which focused primarily on ERP systems in higher education institutions, will add to the body of knowledge already available on the use of technology in education. We will also look at how ERP systems affect communication, decision-making, and stakeholder engagement. This study will also provide light on the difficulties colleges experience in implementing and utilizing ERP systems. The challenges that institutions may face include technical issues, opposition to change, a lack of knowledge, and worries about data security. We can provide suggestions and tactics for effective ERP adoption by addressing these issues, such as proper training and support, quick technical assistance, and strong data security measures.

II. LITERATURE SURVEY

Higher education is just one of several sectors, including other ones, where enterprise resource planning (ERP) solutions are becoming more and more common. Higher education institutions use ERP systems to streamline operations, enhance overall institutional performance, and enhance administrative and academic procedures. The following review of the literature offers an overview of the studies on college ERP systems with an emphasis on the advantages and difficulties of their adoption and use.

Benefits of College ERP Systems

1. Numerous studies have shown how college ERP systems can improve institutional performance and productivity.

2. In higher education institutions, the use of ERP systems improved efficiency in student enrollment, course scheduling, and academic record-keeping, leading to better student outcomes and higher teacher satisfaction, according to a study by Bandyopadhyay and Gupta (2017).
3. Additionally, ERP systems improved interaction and cooperation amongst all parties, including employees, instructors, and students.
4. Alqarni and Alotaibi (2020) looked at the effect of ERP systems on financial management in higher education institutions in a different study.
5. The study discovered that ERP systems enhanced financial reporting, budgeting, and forecasting, resulting in better financial outcomes for the institution and more informed financial decision-making.

Challenges of College ERP Systems

1. Despite the advantages of college ERP systems, their deployment and use may present a number of difficulties.
2. The adoption of ERP systems by higher education institutions was hampered by technical issues, reluctance to change, and a lack of knowledge, according to a study by Das et al. (2019).
3. The study emphasized the significance of providing stakeholders with sufficient training and assistance to guarantee the effective integration and use of ERP systems in institutions.
4. Furthermore, while adopting ERP systems, higher education institutions may face difficulties due to worries about data security and privacy.
5. institutions and emphasized the significance of putting strong data security measures in place and making sure that compliance with relevant rules and standards is maintained.

Overall, the research indicates that college ERP systems provide higher education institutions with numerous advantages, from greater stakeholder engagement and communication to improved administrative and academic procedures. However, issues including technical difficulties, reluctance to change, a lack of knowledge, and worries about data security could appear throughout their adoption and utilization. To address these issues, it is necessary to develop strong data security measures, ensure compliance with pertinent laws and standards, and provide stakeholders with proper training and assistance.

III.LIMITATIONS OF THIS PAPER

While ERP systems for colleges have many advantages, they also have drawbacks that could reduce their overall performance. We will talk about a few of the drawbacks of college ERP systems that have been noted in the literature in this part.

1. High Implementation and Maintenance Expenses: One of the biggest drawbacks of college ERP systems is the high expenses associated with their implementation and upkeep. Higher education institutions, especially smaller ones with fewer resources, may incur significant costs for purchasing, implementing, and maintaining an ERP system. Due of this, it could be difficult for some institutions to demonstrate the ROI of putting an ERP system in place.
2. Limited Customization: College ERP systems are created to satisfy the requirements of different higher education institutions. However, some institutions might have particular needs that specialized ERP solution.
3. Resistance to Change: When implementing ERP systems, higher education institutions frequently run against resistance to change. The adoption and use of the system may be slow due to stakeholders' resistance to changes in their working practices, notably among faculty members and staff. This may reduce the ERP system's efficiency and limit the advantages it can provide.
4. Complex Integration: ERP systems must be integrated with a number of other systems that are already in place, such as student information systems, learning management systems, and finance systems. The integration process can be difficult, demanding a lot of time and money, and sometimes leading to compatibility problems.
5. Data Security and Privacy Issues: College ERP systems gather and retain private data, such as student information, financial data, and employee records. Data security and privacy are raised as a result, especially in light of the growing threat of cyberattacks. To protect sensitive information and adhere to applicable laws and standards, institutions must establish strong data security procedures.

IV.PROPOSED SYSTEM

There are a number of suggested remedies that have surfaced in the literature as a response to the shortcomings of college ERP systems. The challenges and shortcomings of conventional ERP systems are intended to be addressed by these suggested systems, which also aim to provide higher education institutions with more specialized and efficient solutions. We will talk about a few of the ERP systems for colleges in this part.

1. ERP systems that are cloud-based: These systems provide higher education institutions with a more

affordable and adaptable option. These systems don't require pricey hardware or infrastructure because they are hosted on distant servers and accessed online. Cloud-based ERP solutions are a good option for institutions of all sizes since they provide more customization and scaling options.

2. Modular ERP: Institutions can deploy particular modules depending on their individual needs using modular ERP systems. With additional customization and flexibility, this method enables institutions to select the modules that best suit their unique requirements. This strategy also enables organizations to progressively expand the use of their ERP system, lowering the expense and complexity of deployment.

3. Open-source ERP: Open-source ERP systems are collaborative, community-driven, and cost-free software. The code of these systems can be modified by institutions to suit their unique requirements. Since the code is available for public review and inspection, open-source ERP systems also provide more transparency and security.

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5. Blockchain-based ERP: ERP solutions built on blockchain technology provide increased security and transparency by utilizing blockchain technology store.

that are each functionally separate and use information concealment, following ideas like separation of concerns. The program is organized into three modules: administrators, teachers, and students. We'll examine each module in further detail.

1.Student

Every student is a part of a class with a semester and section. Each class is allocated a department and a set of courses. As a result, all members of that class must take these courses. A special username and password are provided to the pupils to log in. They will all have different perspectives. These viewpoints are described below.

i) Student Information: Only the student's own personal data is visible to other students. This includes their contact information, such as name, phone number, and address. Additionally, users may check the courses they are registered for as well as the attendance and grades for each one.

ii) Attendance information: Each course's attendance will be shown. This covers the number of classes that were attended as well as the attendance rate. If the attendance rate falls under a predetermined cutoff, let's say 75%, it will be marked in red; otherwise, it will be in green. For each course, there will also be a day-by-day attendance view that displays the time and status. A calendar will be used to present this.

iii) Marks information: For each course, there will be 5 events and 1 semester-ending test. The ERP system will offer the grades for each of these.

iv) Notifications and events: Every student must complete this section. Notifications are announcements made by the administrator, such as test schedules and holiday declarations. Here, the specifics of the occurrences are listed.

2.Teacher

Each teacher is part of a department and is given classes that correspond to a particular course. Teachers will also be provided with a username and password. Below are descriptions of the various perspectives for teachers.

i) Information: The information about the courses and classes they are assigned to will be available to the teachers. The credits and the syllabus plan are details of the courses. The department, semester, section, and a list of the students enrolled in each class are among the information about the class. Information on students in the same class as the teacher will also be available to the teacher.

ii) Attendance: The attendance of each student may be added to and modified by the teacher. They will be

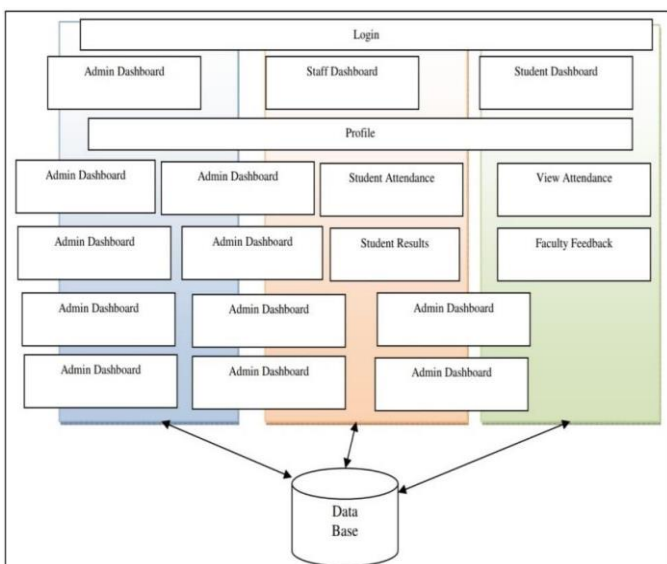


Figure 1: Architecture

V.SYSTEM OVERVIEW

On this project, various Design concepts and procedures were used. The software is broken up into distinct modules

provided with a list of the pupils in each class so they may input the attendance for the entire class on a daily basis. Next to each student's name, there will be two radio buttons: one for present and the other for absent. Additionally, taking additional classes will be a possibility. Both individually and for the entire class, teachers have the ability to change any student's attendance.

iii) Mark: For each course they are assigned, the teacher can input the scores for the 5 events and 1 SEE. In case there are any adjustments, they can also edit the marks. Reports like a student's report card with all of their grades and CGPA on it can be prepared.

3.Administrator

All of the data in the various database tables will be accessible to the administrator. They will have list-style access to every table. They will be allowed to add and edit entries in any table. The admin view will have a modular interface thanks to the design, which will make it easier to query the tables. For effective data access, search and filter features will be made available to them.

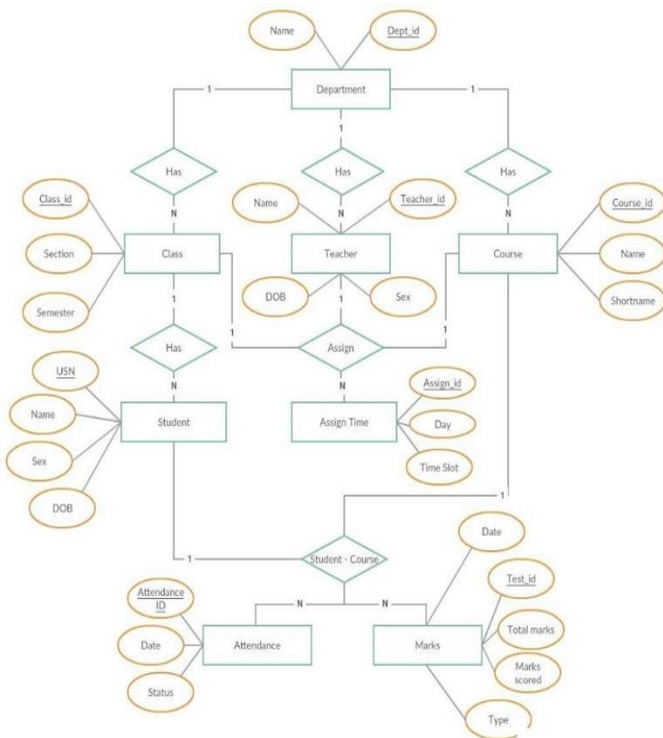


Figure 2: Entity Relationship diagram of college ERP

5.Architectural design

The architectural design is necessary for the ERP software in order to represent the software's design. Here, we specify a set of hardware and software elements and their interfaces to create the foundation for this software's development. There are numerous system components that work together to

make a system. The collection of connectors will support component cooperation, coordination, and communication. The computer-based system is created for the ERP software. It demonstrates an architecture that is data-centric.

i) Architectural style: All student and faculty data is maintained in a database and updated, added, deleted, or amended in the college ERP software. As a result, it demonstrates a data-centric architectural style. The common data repository is the point of communication for the various components in this architecture. The components are largely independent and have access to a common data structure.

The components are:

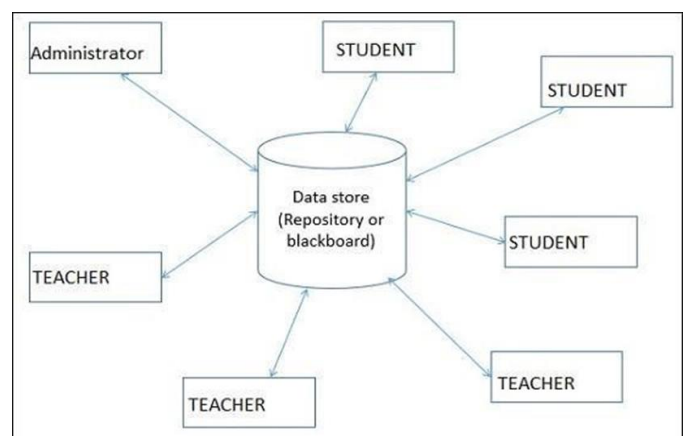


Figure 3: Data-Centric architectural style

VI.RESULT

A college ERP system can have a major and wide-ranging impact on many different aspects of the institution's operations. One or more of the outcomes of a successful deployment could be as follows:

- 1. Increased efficiency:** By streamlining administrative and academic procedures, college ERP systems can save time and money spent on activities like enrollment, course scheduling, grading, and financial administration. This may boost productivity and efficiency, enabling employees and professors to concentrate on higher-value tasks.
- 2. Improved data accuracy and accessibility:** ERP systems for colleges offer a centralized database for academic and administrative data, which can enhance information accuracy and accessibility. As a result, decision-making may be made more quickly and institutional performance may be better understood.
- 3. Enhanced stakeholder engagement and communication:** College stakeholders, including academics, staff, students, and administrators, may communicate and work together more easily with the help of ERP systems. As a result, the institution may experience increased involvement and pleasure as well as a stronger feeling of community.

A good college ERP system installation can have transformative effects overall by enhancing institutional performance, stakeholder engagement, and student outcomes. It's crucial to remember that the system's performance depends on a number of variables, including its implementation's effectiveness, the amount of training provided, and continuous support and maintenance.

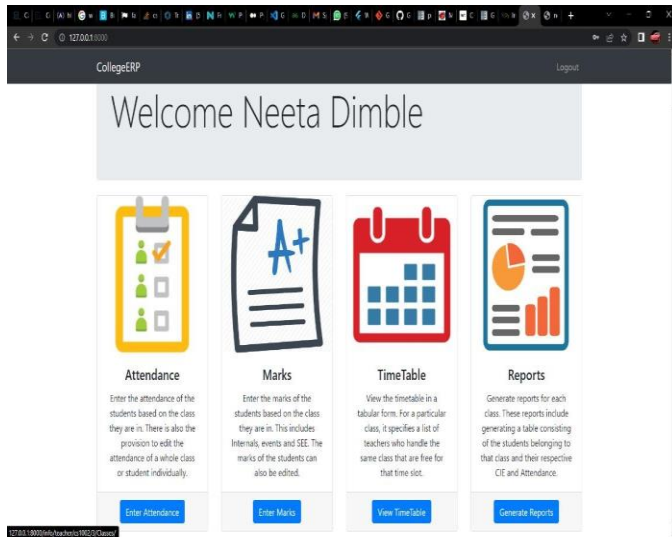


Figure 4: Result of Teachers Home Page

VII.ADVANTAGE

1. Centralized data management: For academic and administrative data, a college ERP system offers a centralized database, increasing data accuracy and accessibility. As a result, decision-making may be made more quickly and institutional performance may be better understood.
2. Enhanced communication and collaboration: A college ERP system can help stakeholders including faculty, staff, students, and administrators communicate and work together. As a result, the institution may experience increased involvement and pleasure as well as a stronger feeling of community.
3. Improved financial management: An ERP system for colleges can help with improved financial management by allowing organizations to keep track of expenditures, control spending, and enhance financial reporting. Better financial results and a more durable institution may result from this.

Better student outcomes: By offering resources for monitoring academic achievement, identifying areas where students may need further support, and enhancing communication between students and staff, a college ERP

4. system can support better student outcomes.
5. Data security: By offering centralized control over data access and lowering the likelihood of data breaches and unauthorized access, an ERP system for colleges may enhance data security.

VIII.LIMITATIONS

1. Expensive System: The fact that Enterprise Resource Planning (ERP) systems can be very expensive is one of their key drawbacks. Costs for other requirements such as computer hardware, upgraded network infrastructure, and security software may be in addition to those for the actual software and implementation.
2. Training Inefficiency: The most important factors in a manufacturing operation are expertise, experience, labor, and resource utilization at its best. Without these components, it is challenging to manage your business effectively and smoothly, which is why comprehensive ERP training is essential to make the system function properly.
3. Degree of Customization: ERP systems' flexibility to be tailored to your company's demands is another drawback. The level of customization offered can vary and typically depends on the software brand selected as some systems provide more customization choices than others.
4. High Implementation Times: For any business, implementing a new operating system can be difficult. The entire deployment and training process could take more than a year, depending on how complicated the business activities are.
5. Inter-connectivity of Departments: A firm may experience disadvantages despite the interconnectedness of its numerous sections appearing to be a positive.

IX.FUTURE SCOPE

In today's world, college management is quickly becoming a crucial aspect of education. With the aid of the College Automation System, we can quickly compile all the necessary data for management. The handwritten data is now computerized via the college's enterprise resource planning system. It is not necessary for different people to handle different portions once the information has been entered into the system or computer. To keep track of all the reports and documents, just one person is required. Additionally, security can be provided in accordance with user needs.

CONCLUSION

The current system makes it challenging to get information from files, and there is no quick or simple way to maintain staff and student records. Also lacking in automation is the current system. Our System is designed to

lighten the workload and significantly increase staff productivity.

The project's name, College ERP System, refers to a system that handles problems specific to a given institution. The faculty and students both benefit greatly from the ease of access to information. Based on their profiles and position inside the system, the college ERP gives users pertinent information. This project was created with the day-to-day issues that a college system faces in mind.

Thus, the basic issue with the administrator's ability to maintain and manage their work is resolved. Prior to this, following the schedule and keeping track of the daily tasks was a little challenging. However, by creating this web-based application, the administrator can have pleasure in the activity while easily completing it and while also saving significant time. The user can access the reports on a regular basis whenever they need them, saving time and eliminating the need for manual calculations. The efficient use of the labor, proper sharing of it, and the provision of reliable outcomes. The storage space will make the operator's task easier. As a result, the system created will benefit the administrator by making their job easier. This system offers automated admissions, eliminating the need for manual processing. This work is electronic. Remote monitoring and control are both possible. It requires less labor overall. It consistently delivers correct facts...

Information accumulated throughout the years can be preserved and retrieved at any time. The information kept in the repository aids management in making wise decisions and producing reliable results. The storage space will make the operator's task easier. The college management system's features and modules have all been effectively integrated into this project in accordance with the specifications.

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