

ERP System: An effective tool for modernizing information management in educational organizations

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Abstract - Enterprise Resource planning systems are revolutionizing almost every aspects of any organization in today's world. The use of ERP solely depends on type of company irrespective of the industry it falls in. This paper focuses on how there has been an increase in the utilization of ERP frameworks in instructive area and deals with the usage of an ERP software. The proposed system covers a wide range of functionalities efficiently. Further in this paper an attempt has been made to improve the quality of modular structure development that can deal with the highly dynamic environment of organizations.

keywords - ERP, ERP Systems, Information Management, Educational ERP, Campus Management

I. INTRODUCTION

Enterprise Resource Planning system is a strategy for constructive planning of all assets in an association. ERP was earlier developed for manufacturing industries. It was then known as material requirement planning and manufacturing resource planning. But later on it was adopted in almost every sector. Due to growing globalization Higher Educational Institutions (HEI) need to implement effective tools of management [1]. This made ERP to land into these institutions.

Many research studies have revealed that organizations that work in a non-ERP environment generally go through numerous problems like assessment & attendance management, payroll management, event handling etc. ERP modular interfacing approach works well with the organizational requirements. For this purpose at the present time these educational bodies are shifting their processing infrastructure over ERP systems that can manage the entire information and operations of the institutions. The online ERP portals, CRM, SCM enable information sharing across all procedures. It supports transparency in data management [2]. The E-system automates the whole process. It intends to use all the assets of the venture to accomplish the objectives set by enterprise [3].

Now a day's educational institution has multiple departments and multilevel users. Managing these departments in a non-integrated manner or manually is an inefficient task. The proposed system provides a simple user friendly interface for management and maintenance of different departments of an academic organization.

This system is a web framework which integrates all modules and functionalities as per requirement specified. A system that can be handled by the administrative head and access by students, faculties, staff members with valid login credentials. Further it contain all information about the type of users interacting with the system, financial ledger that serves the purpose of payroll and fess management, Lesser human resource thus saving time and money, care management, event handling modules etc. This outcome as a benefit that can be passed along to all end users.

This increases effectiveness, data unification for better dynamic, quicker reaction time to questions, better corporate picture and end client fulfillment. So ERP is a system that treats the organization as a single entity and responds to the information needs of the organization. Thus integration and automation are the strengths of ERP systems. This trend towards ERP systems is large at present. It is therefore academies are implementing ERP systems on a higher scale. This is helping them increasing the accuracy and quality of information and better decision making.

II. LITERATURE SURVEY

As mentioned above about the legacy systems such as MRP &MRPII (material requirement planning and afterward manufacturing resource planning) which were applicable to manufacturing associations. These systems had become the fundamental of production management in the early 1970s. From the period of 1990 ERP frameworks turned into the standard framework supplanting other heritage frameworks [1].

The traditional systems that were installed in institutions are standalone applications. These systems are more of solo software having limited functionality and security issues. The procedures are time consuming. Also these systems were having no support for global requirements. This was the need that build up another way to deal with supportability appraisal (SA) incorporated with measures completed and upheld by the ERP framework within an organization [4].Curiously a few creators have recommended the advantages the board approach for the adequately acknowledgment of the framework [5]. It can assist associations with distinguishing their desires and build up an arrangement that can

accomplish their objectives. Moreover it still depends on type of company's requirements and its internal processing structure as per the industry it falls in.

Extended ERP (ERP II) systems can be viewed as modules made together out of software bundles with the modules containing HR, accounting, production, care management and different modules to provide integration for the entire association [1]. ERP II is a blend of Customer relationship, insights frameworks & Supply Chain Management.

A. Implementation Failure

It has been observed that certain ERP implementations fail. This is due to fact that the pre selection screening and package evaluation processes are not performed in a right manner. Many organizations fail due to incompetent implementation & ineffective usage. There are a huge no of ERP running in the market as of now, yet there are higher disappointment rate. It can be reduced by focusing on the integrated modular development, good vendor selection and better package evaluation as per the institutional need.

In spite of the difficulties of executing ERP framework associations in a non-profit sector such as educational institutions have encountered various advantages from the ERP systems over last decade.

B. Success Factors

ERP systems not only serve a significant capacity by incorporating separate business capacities and non-business functionalities but it also works well with other related technologies. These advancements when works in relation with the ERP bundle, it helps in defeating the disadvantages of independent ERP systems. A portion of these advancements are: Business process Re-engineering, Management Information Systems, Decision Support System, Supply Chain Management, Data Mining, Online Analytical handling and Data Warehousing.

Another major factor is global adaption. This means ERP system offers multi-language and multi-currency support which increases the flexibility of ERP system.

ERP also offers better analysis and unified management using the latest development tools in information technology.

E. ERP in Education Sector

ERP growth in the education sector is rapidly increasing the market of smart and innovative e-learning platforms and solutions. ERP systems in advanced education are various in scopes including administrative student information system, financial systems [6]. ERP platforms can be of any type such as on premise, web based or cloud ERP, hybrid ERP depending upon the organizational goals [7]. The integrated management of the educational associations from the perspective of successful usage of assets to improve the productivity of organization management. The modular structure of an educational ERP is very much different from that of a business ERP.

Educational ERP are generally web-based solutions which efficiently utilize data by automating processes in a require manner. It reduces redundancy, inconsistency and ineffective usage. The End users are usually student, faculties and staff members.

The study has segmented the educational ERP by user and component type. By user it can be further divided into primary, secondary and higher education. And by component type it can be segmented into information systems, learning platforms etc.

Previous studies have revealed that it is imperative to contemplate ramifications of utilizing ERP frameworks and the fundamental data needed to stay away from the issues brought about by heritage frameworks to address the part of ERP in changing instructive associations [6].

F. Case Study

The research being discussed is inspired from web based portal developed by various developers. A complete analysis was done on these systems and it was found that these systems carry out administrative and academic tasks and serve all other purposes for the institution. The study states that instead of using multiple portals for different functionalities of an academic institution, it is a better practice to develop an effective and extended ERP solution that can encompass all these academic and corporate functions in a unified central system. The system should compose of parameters such as operational planning, requirements planning, business planning and scheduling.

A throughout investigation was made and an ERP system was proposed as an outcome of the research work for enhancing information management in educational sector.

III. METHODOLOGY FOR THE IMPLEMENTATION OF PROPOSED ERP SYSTEM

A. Proposed Approach

The methodology being discussed according to design of latest educational Erp system for which are enlivened from the total examination of ERP frameworks of universities of India. This ERP system provides a one-point access to all the wide range of functionalities that are generally needed in an educational enterprise.

The proposed ERP system follows the agile programming approach. It depends on iterative turn of events, where prerequisites and arrangement advance through cooperation between cross utilitarian groups.

In this approach, instead of following a step by step approach, all phases of a proposed system are completed in parallel. Under agile framework the method that we are using for implementing the ERP system is Extreme programming (XP).

1. Extreme programming utilizes object-situated methodology.
2. Extreme programming incorporates a bunch of rules and practices that occur inside the setting of four system exercises.
(Planning | Designing | Coding | Testing).

B. Modular Structure of the Proposed ERP System

Modular Structure	Major Modules	Sub modules
5 Major + 4Sub Modules	ADMIN STUDENT EMPLOYEE ACCOUNTS LIBRARY	FEEDBACK Mentoring Portal Attendance Exam & Result

Table1

Table1: Modular Structure- Shows modular structure used for the proposed system. It comprises of total 9 modules, out of which 5 are major modules and 4 are sub modules interlinked with each other.

User Type	Role
No of Users: 4	1. Administrative Head
	2. .Coordinator (Departmental)
	3. Students
	4. Employee(Faculty + Other Staff)

Table 2

Table 2: User type: - shows the user description or we can say the 4 different types of end users that will access the system in future.

ERP systems itself means change with respect to resource planning. This means at any time the no of modules can be increased or decreased as per requirement of the organization. Further about the practical and non-utilitarian necessities of the proposed framework.

1. Functional Requirements

It defines what the system does or what must not do. That is it tells the basic system behaviour. Here, Functional Requirements are Module specific. That is, according to these 5 major modules:-

- Student
- Employee
- Admin
- Library
- Accounts

2. Non-Functional Requirements

It defines how the system does it. That is, it is used to judge system performance.

Here, Nonfunctional requirements focus on Product properties. It specifies the characteristics that affect user experience and user expectations such as Usability factor, Security requirements.

IV. RESULT & DISCUSSION

The proposed ERP model was developed as per the requirements defined. This system provides one point access to manage all the wide range of activities in an educational institution and undergoes a regular maintenance check automatically. This system focuses on quality retrieval of data. Further this system can be easily connect to other related technologies such as Data warehouse, OLAP, Management Information systems if needed.

V. Conclusion and Future Scope

This paper has focused on the learnings of ERP systems as an effective tool for educational institutions. A case study of University's ERP systems was considered and the total work is done through the accompanying advances. In this ERP, A simple interface is providing so that administrators and users can have a better experience. In this ERP we try to overcome the problem of multiple ERPs.

1. Study and investigation of existing ERP models.
2. Developing an ERP system to understand the practical concepts involved in modular structure development.

This research explored the following question "Why there has been a significant increase in the utilization of ERP frameworks in academic domain?" and also "The performance of multiple ERPs over cloud domain."

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