

Factors for Implementation of ERP in Higher Education – A Literature Review



ISBN: 978-1-943295-14-2

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Implementing Enterprise Resource Planning (ERP) system is complicated and very costly too. Higher Education Institutions (HEI) are not able to implement ERP successfully. It has been claimed that many HEI meets their expected outcomes, only 60% to 80%. As per the available literature about ERP implementation in HEI, many countries struggling due to various factors. This paper is going explore the literature reviews of various important factors for the successful implementation of ERP in HEI, particularly in the Indian context.

Keywords: Enterprise Resource Planning, Higher Education

1. Introduction

Enterprise Resource Planning (ERP) plays a vital role in business sectors. Because it integrates the entire business activities from top to bottom, and it improves productivity in many folds. Nowadays, apart from business sectors, ERP is invading too many areas such as health care, insurance, higher education, etc. But unfortunately, many Higher Education Institutions (HEI) are not able to implement ERP successfully. Due to various reasons and, it has been claimed that many HEI meets their expected outcomes, only 60% to 80% [1]. This paper discusses the important factors which has to consider while implementing ERP in HEI based on the literature review.

2. Higher Education Institutions (HEI)

HEI workflow is entirely different from the business sector. Most of the HEI are non-profit organizations and strictly follow government policies. Higher Education Institutions (HEI) mainly has two activities one is administrative activities, and the other one is academic activities. Administrative activities are such as human resources, finance, purchase, stores, general administration, etc. In the case of academic activities commencing from student's admission to publishing results, attendance, class schedule, course bidding, etc. Even though these two are different activities, both are interconnected. It is observed that many research articles about ERP implementation in higher education are focusing either on academic activities or administrative activities, not as a whole.

In the present scenario, HEI is computerized in their academic and administrative activities, but all are in bits and pieces. As we know that if the systems are not integrated, to integrate the process need manual intervention, it will take more time, lack of transparency in the system, and also the possibility of human error. If the system is integrated, it will improve the overall working efficiency and proper academic planning, and also it may improve the quality of education too.

3. Evolution of ERP

In the 1960s, the manufacturing companies developed software for managing inventory control, which was designed to handle inventory based on traditional inventory concepts. In the 1970s, these packaged further developed to handle components, raw materials planning, and procurement to master schedule built for the end items and it was called Material Requirement Planning (MRP). In the 1980s, MRP extended for shop floor and distribution management activities that concept called MRP-II. In the early 1990s, the software further developed to cover the entire business process like finance, human resource, project management, etc., which is called ERP. Since the system connects the entire business process in a single database, ERP is a complex system. [2]. Figure 1 shows the conceptual diagram of the ERP supply chain management system.

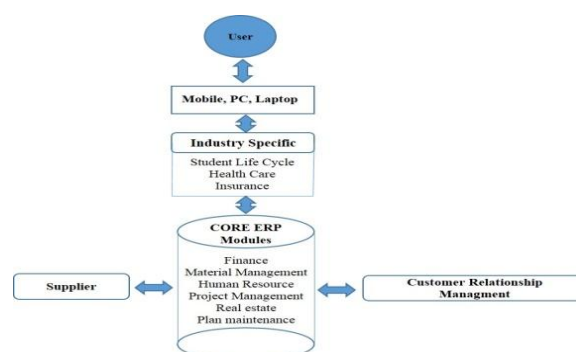


Figure 1 Conceptual ERP Supply Chain Diagram

In a nutshell, ERP is a set of modules which interconnects all functional areas of a business such as finance, human resource, production, customer relation, etc. into a single integrated system with a common platform for information flow. [3].

ERP should have the following Characteristics

Open System Architecture - ERP should run on any platform and any hardware.

Data Sharing: All ERP modules should share the same data definition across the ERP processes.

Centralized Database: Within an organization, ERP should maintain a single set of data across the entire ERP process.

Flexibility: ERP should have a facility to add or remove the modules without affecting the other modules. And also support different database back ends.

Across-the-Board: ERP should be suitable for any organization, i.e. it should support a wide range of functional modules.

Simulation of Reality - capable of simulating real business processes. [3].

4. ERP in Higher Education

For many years HEI used to manage their huge amount of information by software, which might have developed in-house or third-party software. These information systems mostly maintained by dedicated HEI computer staff. ERP implemented successfully in many industries and organizations such as manufacturing, health care, insurance, finance sector, communication, etc., around the globe [3]. In recent years, ERP invaded HEI, and ERP implementation in HEI increased in many folds around the world. Therefore the ERP market started focusing on HEI, and it has shown rapid growth [4].

From the perspective of HEI, ERP started providing a different set of modules apart from the ERP core module, for example, student lifecycle management software from ORACLE and SAP [5], which will handle the student admission process, student data management, course enrollments, attendance, course management, library systems, alumni management, feedback, research, etc. [4].

The HEI started adopting ERP in the hope that will help HEI cope with the changing environment. As a result, existing information systems in HEI replaced by ERP to achieve more efficiency and accessibility for all members and improve end-user performance by providing an ERP system [6].

5. Important Factors for Successful Implementation

Successful implementation of ERP with regular follow-up only will be effective, and it will yield a better result. But Implementing an ERP system is complicated, time-consuming, and very costly, too [3]. Based on the available literature about ERP implementation in HEI, many countries struggling due to various factors [4], [8], [2], [9], [10], some of the important factors which have to be seriously considered are listed below:

- **Top management Support:** This is one of the most important factors; without top management support, ERP cannot implement successfully.
- **Consultant:** Consultant plays a very important role in ERP implementation, therefore the consultant must be well experienced and the hand of full knowledge about ERP.
- **Cost:** Before implementing top management must be aware of project cost; otherwise, the project may fail while half-way through.
- **ERP Selection:** While evaluating, proper ERP selection has not done based on the requirement; it may misfit for the institution.
- **Cultural:** - Cultural fit also may affect the proper implementation, mostly ERP developed by the developed countries, some criteria such as terminology, language, etc., it may not be suitable for all institutions. Therefore while selecting ERP, select which will properly fit for the institution.
- **Employee Resistance:** - Employees may resist due to various reasons such as over workload due to double data entry, may not like change management, perception, retention of institution process, don't want to change their work culture since they are familiar with the existing system, etc.
- **Project Management:** Poor project management, less knowledge, and poor planning may lead to challenging of ERP implementation.
- **Clearly Defined Goals:** The goal and scope of the project should be communicated clearly to the vendors before implementation.
- **Project Planning:** Proper planning should be done, and it should be properly communicated to all.
- **Implementation Strategy:** Proper implementation strategy should be followed.
- **Customization:** Customization should be avoided or at least less customization, because it may cost you more as well as time-consuming.
- **Business Process Reengineering (BPR):** Poor quality of BPR will lead to incorrect system configuration, and if the consultant did not map the functionalities depending on the institute requirement, it might lead to incompatibility with ERP and institution requirements.
- **Infrastructure:** Poor IT infrastructure may lead to a slow process.
- **Training:** - Proper training has to be given to the user based on their level of IT knowledge. Users may not be able to attend a single session due to busy with their existing workload; therefore, multiple time training may require

- **Testing:** Without proper testing, put it live may affect the entire institute process. Therefore thorough live testing should be done before put it on live.
- **Too Tight Project Schedule:** Due to budget constraints, top management insisted on reducing the project schedule or without proper training may lead to project failure.
- **Communication:** Proper communication is important while implementing ERP; each stage of implementation should be communicated from top management to end-user as well as a consultant by the ERP vendor.

6. Benefits of ERP

Since very few successful implementations of ERP in HEI, it does not realize the effect of the ERP systems fully. Based on the literature review [7], [6], [5], [11], some of the intangible benefits of using ERP are listed below:

6.1 Core Benefits of using an ERP:

An ERP system creates a single version of the truth and no data redundancy because everyone uses the same system. It also establishes a self-service for the faculty, students, and employees. It provides accurate real-time data, and it can be accessible by user-friendly web-based interfaces using various gadgets such as laptops, mobile, desktop, etc. from anywhere, anytime. This will help for proper planning and better management, and it improves workflow, internal communication, increases efficiency and productivity. ERP emphasizes transparency, accountability, tightens controls and automates communication through e-mail alerts.

6.2 Benefits for Administration

In ERP, all workflows are digital, paperwork will be less, and it reduces piles of files. Automation will save time for managing information and reduce paper will save money. Quick access to real-time data will become useful for accurate decision making. Reports can be generated from anywhere in the world, and cohesive information can be easy to manage academic and administrative processes.

6.3 Benefits for Faculty

Due to less paperwork, time-consuming administrative functions by the faculties will be less, and student's attendance is completely automated in ERP. Therefore faculties can fully concentrate on students and teaching. It improves teaching efficiency through content and information about the student, manages class information and analytical reports. Also, it improves the quality of interaction between students, administration, and parents.

6.4 Benefits for Students

Better flow of information about class schedule, assignments & announcements, better communication with alumni to gain their immense experiences, better access to library material, and other references will improve the quality of students.

6.5 Benefits for Parents

Since the information is transparent and easy to communicate with faculty and administration and also parents can access grades, attendance, fee status, exam schedule, announcements, etc. will save time and money in communication aspects.

6.6 Technical Benefits

Campus-wide integrated information runs on a common system, reduce the need for backup systems, the manual process either removed or reduced, develop and maintain consistent data definitions, robust data integrity and reliability, system-wide security and protection of confidential data, high availability of academic and administrative systems are the benefits of using an ERP system.

7. Conclusion

The majority of the literature about the implementation of ERP in HEI is conducted in developed countries such as the USA, UK, Australia, Canada, etc. when compared with developing countries such as India, Pakistan, etc. [12]. India is still in an early stage of ERP implementation in HEI. Though not all implementations are successful, it still successfully implemented ERP in many industries and it reaps the benefit by reducing inventory, improving customer services, enhancing communication, etc. ERP implementation in developing countries is a challenging process, some of the major failures are due to high cost of implementation and maintenance, lack of top management support, employee resistance, the dearth of ERP exposure, poor IT infrastructure, etc. [3]. Since ERP core module is in line with administrative activity it can be easily implemented without much of customization, but for academic activity is very difficult because it is entirely different process and each country follows their own culture, government policies and ERP is a generic type of software, but the HEI functions are unique process, therefore, more customization is required.

However, success means satisfying the customer need; their ERP vendors are failing because the vendor has a lot of experience in the business process, but they lack in the academic process. If ERP vendors concentrate and understand the academic process, then customization can be minimized. And they can properly train people accordingly, easily convince top management, and due to less customization cost and implementation time also drastically come down.

8. References

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