Enterprise Resource Planning (ERP) System as an Innovative Technology in Higher Education Context in Egypt

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Abstract

The global adoption of ERP Systems in Higher Education Institutions (HEIs) has improved substantially over the past decade. Although this demand continues to grow, with HEIs now a chief target market for ERP vendors, a few studies has been published on the topic. This paper reports a sub-study of a larger research effort that lead to contribute to understanding the phenomenon of ERP adoption in Egyptian HEIs. The educational ERP of business activities in higher education go through different modules. ERP in higher education should respond the real requirements of the education system. Enhancements or mere adaptations of legacy solutions, which stemmed from the experience in business practice, are not always successful. The current paper shows the contents of the ERP system that serve the education system successfully and describes the ERP system as an innovative technology for better higher education and hence invite Egyptian HEIs to adopt these systems. Enterprise Resource Planning systems have emerged as solutions oriented to effectively manage organization´s resources. They allowed the automation of its department's activities, made information accessible to users as needed, supporting more accurately their decision-making needs. Furthermore, the implementation of these systems has brought significant benefits to users and organizations.

Keywords: Enterprise Resource Planning, Higher Education, ERP systems, ERP in Higher Education, Education Resource Planning, ERP benefits, Egypt.

Introduction

Enterprise Resource Planning term comes from the industry for integrated, multi-modules application software packages that are aimed to serve and enhance multiple business functions. ERP system can include software for manufacturing, order entry, general ledger, accounts receivable and payable, purchasing, warehousing, transportation and human resources. As a result of developing out of the manufacturing industry, ERP entails the use of packaged software rather than proprietary software written by or for one customer. ERP modules may have the ability to interface with of an organization's own software with changing degrees of effort, and, relying on the software, ERP modules may be alterable via the vendor's own proprietary tools as well as proprietary or standard programming languages [1].

According to El-Seoud, et al. [2] the higher education sector in Egypt is big and comprised of public, private and foreign universities in addition to institutions of technical and professional training . There are many problems that occur in Higher Education Institutions and ERP systems can positively contribute in mitigating and reducing the effects of these problems. Unfortunately, to date, the complete use of ERP has not been adopted by the foremost part of Higher Education sector in Egypt.

Brief History of ERP Systems Evolution

Historically, ERP systems evolved from materials requirement planning (MRP) earlier in the 1970s. Subsequently, in the 1980s, manufacturing resources planning (MRPII) provided production as well as tactical and strategic decision-making capability, and were used as decision support systems (DSS) and executive information systems (EIS). After that, in the 1990s, ERP systems introduced financial services, accounting services, human resource management, production management, and sales functionality in a combined business suite. Since the turn of the century, extended ERP or ERPII systems have provided functionality across the supply chain, including warehouse management systems (WMS), transportation management systems (TMS), advanced planning systems (ADS), analytics, business intelligence (BI), supplier relationship management (SRM) systems, customer relationship management (CRM) systems, and e-business [3, 4].

According to Annamalai and Ramayah [5] ERP systems have global popularity as the so application that would lead to high profitability, enhance businesses' efficiency, productivity as well as streamline their operations. ERP is not just an automation of the organization's business process; it enables the organization to make re-engineering of its business process to achieve its long term success. It provide several advantages such as enhanced process flow, reduced inventories, improved data analysis, superior customer service, better enterprise performance and greater efficiency. All of these invite organizations to adopt ERP systems to strongly enter the competitive market [6].

Hence, the term ERP (Enterprise Resource Planning) systems as a complex and comprehensive software packages designed to integrate business processes and functions. Despite the problems and threats of implementing such a system, the last decade has seen a remarkable global extension of such systems into other disciplines such as Higher Education.

ERP Systems in Higher Education Sector

ERP systems are used by large corporations around the world, recently replacing management, financial and administration computer systems in the higher education sectors [7]. ERP has played a significant role in the IT management of higher education but it was –to some extent- far from the core discipline of the higher education. It is important to define ERP systems in higher education as being multiple in scopes, tracking a range of activities of including those of human resource systems, administrative student information systems and financial systems [1].

Despite the challenges of implementing ERP systems, organizations in the business sector, which likely operate in more financially competitive environments than those in the nonprofit sector as most of higher education institutions, have experienced numerous benefits from ERP systems during the last two decades only on the management , financial and administrative level. Higher education has always been a sector that have unique organizational models and core processes as well as objectives compared to other business, the higher education system supports the academic activities in colleges including some basic process such as scheduling, learning process - advising and follow up and performance indicators- , and examination process. Previous studies have identified many similarities between implementing ERP system software in educational institutes and in other organizations [7].

According to Pollock and Cornford [8], it is tempting to see the HEIs as unique organizations that are different from other organizations. This uniqueness can be based on a combination of different characteristics, which, according to Davies and Lockwood [9] could include:

- complexity of purpose,
- limited measurability of outputs,
- both autonomy and reliance from widespread society,
- structure and authority diffusion, and

- Internal fragmentation.

Pollock and Cornford [8] claims that Universities share similarities with manufacturing organizations, but identifies that Universities have definite and exclusive administrative requirements. Traditional ERP systems address basic business administrative functions such as HR (Human Resource), Finance, Operations & Logistics and Sales and Marketing applications. Yet, the HE sector entails distinctive systems for: Student Administration, Course/Unit Administration, Facilities (Timetabling) requirements, and other applications, not part of traditional ERP [10]. According to [11] ERP systems that serve administrative and academic sections in Saudi universities cover the following administrative sectors like Human resource, Financial management, Procurement management, Where house (store) man, Student registration mana, Library management.

Therefore, this study stresses on the effects of using ERP systems in higher education with a view to deeply understand ERP phenomenon in these institutions and the necessary information required to avoid the problems caused by legacy systems, in order to address the role of ERP in changing educational organizations and the implications of its use in similar organizational cultures and determine whether or not these system work well to deliver the right outcomes.

ERP Systems Benefits in Organization

Organizations invest in ERP systems to achieve important benefits. These paybacks may arise in the form of better business productivity such as shortened lead time, lower cost and efficiency communication among functional boundaries [12, 13]. Yet these expected outcomes are not always noticeable for ERP implementing businesses. An examination of US manufacturing firms found that though ERP systems were very known within the industry, the systems did not give major reduction in operating expenditures [14].

Actually, ERP outcomes can differ across industries and in many cases may rest on the implementing companies [15]. Previous literature has attempted to understand the drivers of ERP benefits. Shang and Seddon [16] suggested five dimensions of ERP benefits namely, operational, managerial, strategic, IT infrastructure and organizational and determined that ERP benefit was a continuous process with paybacks realized at different rate in diverse core processes. Similarly, Gattiker and Goodhue [17] stated that over all ERP benefit was mediated by intermediate benefits and that realizing intermediate outcomes was a precondition to achieving overall ERP benefit. Chou and Chang [18] asserted the role of intermediate outcomes as predictor of overall ERP benefit but also claimed that customization and mechanisms of the organization were robust predictors of intermediate ERP benefits.

ERP as an Innovative Technology for Higher Education Sector

According to Rabaa'i, et al. [10], the main advantages of ERP for HEIs are: (1) improved information access for planning and managing the institution; (2) better services for the university, students and employees; (3) less business risks and (4) increased income and decreased expenses due to improved efficiency. The benefits of ERP are also the matter of a study by Spathis and Ananiadis [19], based on users' expectations and perceptions, focusing on three dimensions in the following order: managerial, operational and IT infrastructure. The research concerned the impact in relation to accounting information and management of an ERP system implemented at a large public university in Greece. Indeed, numerous studies have explored the advantages for administrative systems infrastructure to be gained from ERP, identifying criteria that need to be met by administrative systems in terms of computing infrastructure in order to enable successful adoption [20-22]. According to these studies, the main advantages of implementing ERP in HEI are:

- Better information access for planning and managing the institutions.

- Improved service for the university, students and employees.

- Increased income and decreased expenses due to improved efficiency.

- Secure data from the top security risks.

- Unlimited access to authorized users.

- Maintainability of the system.

- High performance and reliability.

- Scalability/adaptability.

- Unifying information and processes related to students, faculty and staff.

- Better decision making.

- Meeting compliance and governance.

- Promoting relationships.

- Providing greater flexibility to users.

- Easier and quicker access to data for reporting and decision making.

Conclusion

ERP helps organizations meet the challenges of globalization with a comprehensive, integrated application suite that comprises next-generation analytics, human capital management, financials, operations, and corporate services. ERP is designed to allow businesses to succeed in the worldwide marketplace by supporting international legal and financial compliance issues, and enabling organizations to choose internal operations and business processes to meet country-specific needs. This will be helpful for decision makers (managerial people) of organizations to evaluate various available ERPs in acquisition and implementing. This will also further support managers in assessing the benefits of their existing ERPs in the organization in a more objective way globally.

Assessing whether investment in enterprise systems pays off is an important issue. Higher Education Institutions can achieve a number of tangible and intangible benefits due to thesuccessful implementation of ERP systems. The efforts to implement ERP systems in higher education institutions were marked by a wide range of results. In this paper, we provide a very significant and explicit contribution for highlighting the most important benefits of ERP implementation in Higher Education sector. This research will add knowledge on ERP as an Innovative Technology in the context of Higher Education. This study has contributed to academic research by outlining some of the outcomes achieved when higher education sector adopting and using ERP systems and so, motive other HEIs, especially in Egypt to adopt ERP systems as a beneficial resource.

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