ERP CHALLENGES IN HIGHER EDUCATION

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Abstract - ERP in higher education should respond the real requirements of education system. Enhancements or mere adaptations of existing solutions, which are taken from the experience in age old business practices, are not always successful. 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. So it is necessary to study the implications of using ERP systems in higher education and the information required to avoid the problems caused by inherited systems, in order to address the role of ERP in changing educational organizations and the implications of its use in similar organizational cultures. The current paper shows the contents of the ERP that serve the education system successfully and also shows the needs and future expectations of higher education institution.

Keywords - ERP in higher education, education management, change management, Education Resource Planning

I. INTRODUCTION

Enterprise Resource Planning or ERP is an industry term for integrated, multi-modules application software packages that are designed to serve and support multiple business functions (Bahar Yelken 2005). Enterprise Resource Planning (ERP) systems provide a standardized and seamless integration of all the information flowing through the various business functions (Davenport 1998). A seamless integration, however, is not possible without the system being configured suitably by selecting the correct modules to implement and by setting the right parameters. ERP packages are purchased or leased from ERP vendors, and this means that the system is developed in advance instead of being developed in-house within an organization. Consequently, organizations need to adapt the way they work to fit with the ERP functionalities.

When organizations implement an ERP, they go into a long-term relationship with their ERP vendor. Thus, the implementing organization is dependent upon the ERP vendor upgrades and functionalities (Markus and Tanis 2000). Because ERP systems are designed in advance to fit many different organizations, they consist of embedded best practice solutions. Best practice solutions are often developed in collaboration between the vendor and the most influential customers and therefore best practices do not always represent the majority of enterprises’ conduction of business. In fact, it is widely argued that an ERP system cannot improve performance without having the customer organization restructuring its operational processes. Therefore, many organizations go through the complex business process re-engineering (BPR) process in moderate or radical fashions to realize the benefits of the new system (Luo and Strong 2004). Despite that ERP systems have existed for several decades, still a high percentage of implementation failures are documented. For example, Parr and Shanks (2004) have studied several ERP projects and state that 90% of ERP implementations exceed either budget or deadlines. Likewise, Jones (2007) argues that the majority of ERP implementations dramatically cross their estimated time schedules and budgets. In addition, a recent survey published in Panorama Consulting’s annual ERP report for the year 2015, suggests that approximately 41% of the participating organizations have received 50% or less of the expected benefits and process improvements from their ERP implementations (Panorama 2015).

A successful ERP implementation requires that the ERP system fits the organizational business processes. ERP systems are usually bundled with predefined and built-in assumptions and procedures on how an organization’s business processes should be handled. These procedures and assumptions will virtually never be perfectly adapted to the organization implementing the ERP system (Hong and Kim 2002). Thus, previous researches indicates how ERP systems correspond to work routines and processes in different organizations, and have concluded that there always exists an aperture between organizational practice and the way an ERP system works, regardless of organization.

ERP system can include software for manufacturing, order entry, accounts receivable and payable, general ledger, purchasing, warehousing, transportation and human resources. Evolving out of the manufacturing industry, ERP implies the use of packaged software rather than proprietary software written by or for one customer. ERP modules may be able to interface with an organization’s own software with varying degrees of effort, and, depending on the software, ERP modules may be alterable via the vendor’s proprietary tools as well as proprietary or standard programming languages. (Lehrstuhl für Wirtschaftsinformatik 2014).
II. BRIEF HISTORY OF ERP

The focus of manufacturing systems in the 1960’s was on Inventory control. Most of the software packages then (usually customized) were designed to handle inventory based on traditional inventory concepts. In the 1970’s the focus shifted to MRP (Material Requirement Planning) systems that translated the Master Schedule built for the end items into time-phased net requirements for the subassemblies, components and raw materials planning and procurement. (Fusion ERP 2009) In the 1980’s the concept of MRP-II (Manufacturing Resources Planning) evolved which was an extension of MRP to shop floor and Distribution management activities. In the early 1990’s, MRP-II was further extended to cover areas like Engineering, Finance, Human Resources, Projects Management etc i.e. the complete gamut of activities within any business enterprise. Hence, the term ERP (Enterprise Resource Planning) systems as a complex and comprehensive software packages designed to integrate business processes and functions. Despite the difficulties and risks of implementing such a system, the last decade has seen a remarkable global extension of such systems into other disciplines such as Higher Education.

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ERP systems are used by large corporations around the world, recently replacing management, financial and administration computer systems in the higher education sectors (Pollock and Conford 2005). 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. Despite the challenges of implementing ERP systems, organizations in the corporate 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 (Pollock and Cornford, 2005). It is therefore important to study the implications of using ERP systems in higher education and the necessary information required to avoid the problems caused by older systems, in order to address the role of ERP in changing educational organizations and the implications of its use in similar organizational cultures.

MODULES OF ERP IN BUSINESS VS HIGHER EDUCATION

As education has become ‘big business’ and high end higher education institutes and universities throughout the world struggle to adjust or reorganize their identity within an era focused on “commercializing higher education” (Kassel 2009 UNISCO report), software vendors are increasingly viewing the education market as a lucrative “industry” potentially worth several hundred billion dollars in revenue (Kassel 2009, UNISCO report). The growing popularity of ERP technology within today’s uncertain educational environment has the potential to redefine intra-organizational operations and transform administrative functioning within many higher education institutes and universities. In addition, if vendors are able to market successfully their model as a viable “industry solution” for multiple cultural contexts, higher education operations may become more standardized, so far most of the ERP systems include a similar modules. Apparently none of the venders solicitious the higher education ERP real functionalities, although the ERP space in higher education is moving rapidly. Vendors that have not spent much time understanding the needs of higher education are doing much better now than previously, though they can still do much better. Because of the growing competition, vendors are working at rolling out integrated suites of software that support the thin client Web interface and object oriented systems. New versions are now rolling out much faster, making it challenging to keep up with the ERP project that never seems to end. As soon as you are done with the implementation, you are working on the next major upgrade, of course the available ERP in the market is not matured enough to meet and satisfy the higher education requirements.

Most of the institutes or organizations feel that getting a state of the art ERP application is the end, whereas having the ERP in not the end, but it is the means where the end is the ultimate user satisfaction. Obviously, this is the situation of ERP system in higher education. User satisfaction always depends on the higher education functionalities availability in the ERP application which describes what higher education ERP system should do, while non-functional requirements place constraints on how the higher education ERP system will do so. Some of the...
functional and non-functional requirements for the higher education ERP system are as follows:

**Functional requirements:** Institution profile, Staff profile, Student profile, curriculum, Attendance, Performance analysis, Internal messaging, Hostel management, Transportation management, Feedback mechanism, Library management, Online examination, Alumni management, Semesters Calendar, Marks record maintenance, Accounting, Time table etc. The functional requirement is describing the behaviour of the system as it relates to the system's functionality.

**Non-functional requirements:** The non-functional requirement elaborates a performance characteristic of the system. Some of the typically non-functional requirements’ areas are:
- Accessibility
- Capacity, current & forecast
- Reliability
- Compliance
- Documentation
- Disaster recovery
- Portability
- Quality
- Response time
- Efficiency
- Effectiveness
- Privacy etc.

Finally as higher educational institutes can move toward some best-practice models, the possibility of having proper ERP system for higher education can be done easily and successfully in case we have a clear definition of the higher education ERP functionalities.

### III. CHALLENGES OF ERP SOFTWARE IN HIGHER EDUCATION

Due to poor ERP selection and evaluation process, ERP software can be found to be ill-fitting with the business requirements. Some of the major causes of gap between the available ERP solutions and requirements (causes of failures in higher education are as under. (Charisma 2014).

1. **High turnover rate of project team members:** In non-profit organization as higher education institutions with the governmental payroll, if the project team members suffer from high work stress and workload when coping with the implementation, some member teams may resign from their job, which means insufficient ERP knowledge and skill transfer among project teams during the ERP implementation life cycle. In the end, users and project team members will have insufficient ERP knowledge for performing their daily tasks when using the ERP system.

2. **Over-reliance on heavy customization:** Due to software mismatch, heavy customization will be required in the areas of program customization and report customization. Customization could cause project delays, overspent budget and an unreliable system (due to poor quality of customization, unresolved system bugs and insufficient testing). Customizing the ERP to fit with specific leasing business processes might lead to sacrificing "best practices" embedded in the ERP system.

3. **Poor consultant effectiveness:** Some of the consultants can be considered to be inexperienced with ERP systems and unable to provide a professional level of advice on ERP project planning. Consultants that communicate ineffectively during the project phase and just suggest workarounds without applying professional skills to conduct BPR (Business Process Reengineering) to bridge the gap between ERP systems and business processes are considered inefficient.

4. **Poor IT infrastructure:** The poor IT infrastructure will most probably lead to a slow processing capability of the ERP system. If the top management has provided insufficient financial resource for the implementation process, then a low performance IT infrastructure hardware will be proposed by the consultants and project manager to reduce the costs of ERP implementation.

5. **Poor knowledge transfer:** Inexperienced consultants that are not aware about the specificity of the leasing industry and try to practice during training sessions will not deliver professional ERP training to the users. Also, if the training material is not written properly, all the information will be found to be too brief and unhelpful.

6. **Poor effectiveness of project management:** It is important for the project manager to effectively manage the consultants, for example, in evaluating their communication and training performance, when conducting BPR (Business Process Reengineering), and when testing the system performance. If there is limited ERP knowledge, capability and poor project management skills, the ERP project will be considered to be challenging and demanding, as it involves managing systems, people as well as re-designing business processes.

7. **Poor quality of Business Process Reengineering (BPR):** It will be difficult for project team members to collaborate and contribute to BPR, and the poor quality of BPR will lead to incorrect system configuration problems. It is also possible that some of the project team members to have an unclear vision of why or how to conduct BPR because their consultants provided unprofessional advice for conducting BPR. If the business processes are not successfully reengineered to fit with the ERP systems, and the project teams are not ready for the adaptation of new business processes, they
will not have the mindset for implementing or using the ERP system.

8. **Poor quality of testing:** The ERP testing result is an indicator for revealing the readiness of the ERP system to “go live”. An over-tight project schedule and an insufficient knowledge in testing ERP systems, will conduct in a rush and low quality.

9. **Poor top management support:** Limited support by top management will contribute to a rushed ERP implementation process, project team members will be overloaded and high staff turnover rate, ineffective knowledge transfer, and political problems will occur.

10. **Too tight project schedule:** If the top management and the project manager will like to reduce the budget of the ERP project and they will set the project schedule too tight, the implementation activities will be conducted in a rush in order to meet the project deadline. The project team and users will overload the system.

11. **Unclear concept of the nature and use of ERP system from the users’ perspective:** Due to poor quality of training and insufficient education delivered by the top management and project team, users will not have a clear idea of the nature and use of the ERP system. They will not understand the rationale for implementing the ERP system and will resist to change, which will lead to political problems and poor quality of BPR.

12. **Unrealistic expectations from top management concerning the ERP System:** If top management will assume that the ERP implementation will provide great solutions without considering the complexity of the ERP system, this will lead to whole project team and users unrealistic expectations. This misconception will lead to superficial project planning and an underestimation of budget and resource allocation, and will result in failure of ERP implementation from a project management perspective.

**CONCLUSION**

This paper proves that ERP is not a mere acquiring of ERP application. Current ERP for business have different set of functionalities that is significantly different from the academic functionalities required for higher education institutions. ERP for higher education should be tailored specifically to address the academic functionality. Therefore ERP for higher education should start with the organization structure including strategy / policy, data flow, business processes structure, and academic functionalities as an unique discipline. The paper strongly recommends that, there should be a unique ERP road map for higher education functionalities according to the suggested framework. This road map can achieve better control on universities operations, and effective processes management. In addition it will represent a new statement of requirements for ERP in higher education to which the ERP vendors will respond with a new ERP system specifically addressing the real need of higher education.

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