Survey on Current Status of ERP Implementation Modules in Technical Educational Institutions

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Abstract

ERP is used in many Technical Educational Institutions now a days. Starting with ERP and implementation of ERP are very crucial activities in achieving success. The ERP modules in TEIs differ from those applicable in various organization which are using activities like supply – chain management etc. This paper highlights some common modules which can be used in TEIs. A survey of what is the requirement and actual scenario of these modules is also done. The TEIs are classified as University and Autonomous Institutions.

Keywords: ERP, Technical Educational Institutions, Modules.

Introduction

ERP system is the flow of information flow where the database is to save all enterprise data, so in order to be successful. ERP implementations differ significantly with respect to their motivation and objectives. These differences significantly affect the overall scope, design and approach to the ERP implementation. ERP is acting as an impetus for the replacement of a mix of aging legacy systems with a common platform even in TEIs. It is expected that ERP will be implemented in well reengineered and process based organizations including TEIs. One major thrust behind the BPR philosophy is to fix the process before automating them. This means that an organization should redesign its business processes before applying automated information technology such as ERP. If done correctly, it would produce an increase in performance through the use of information technology. The academic institutions now a days are advancing in use of ERP solutions. A number of vendors providing ERP for educational institutions are SAP,

Peoplesoft etc. Though there are a number of modules in different ERP packages by different vendors, there is a need to analyze all the modules required in TEIs.

Literature Review

Effective ERP is about a transformation involving clarifying business strategy and objectives, and designing integrated processes, technologies, information systems and skills to deliver on these. (Willcocks and Sykes,2000) The difficulty with effectively implementing ERP systems suggests that many organizations do not appreciate the issues and problems typically encountered during the ERP life cycle. Post implementation review is important for effective ERP implementation(UDO,2002) .

ERP applications need to implement Business Process Reengineering , efficient project management in a rationale way to enhance the responsiveness and improve customer satisfaction. For this, a comprehensive survey and assessment is also identified as a critical success factors (Tseng et. Al, 2009) along with other success factors . Business process models play a major role for the success of e-business has been also verified in . Some ERP vendors like SAP have understood this development and implement their model-based e-business applications. Change management has been identified important for success in ERP Implementation. Nine factors are identified for effective change management by (Trieu,2010). These factors are Top Management Support, Effective Communication, Effective Training or Knowledge Transfer, Clear and Systematic Planning, Project Champion , Incentives ,Broad Participation, Project Teams and "Feedback". high-level executive' support and promise, prospect and planning, budget, relevant tactic, project management, member in one project, reform of management cultures, system's function, and management for reform (Finney and Corbett ,2007).

In a survey, the importance of user participation in Enterprise systems is identified. User participation is used to gather local intelligence about particular needs and difficulties . Many of these local needs will be supported through the configuration of the Enterprise Systems . Others will not lead to configuration requirements, but rather local practices may have to be changed (Kawalek and Wood-Harper, 2002). Advance Resource Planning can be included along with ERP module to estimate the impact of variability, complexity and dynamic system behavior on key planning parameters. Ghuman and Chaudhary (Ghuman and Chaudhary, 2012) has suggested that "ERP needs to be implemented module wise by implementing pilot projects in

select department so that software is customized in a timely manner before its full fledged organization wide implementation."

True enterprise integration means both technical and behavioral integration. It means integrating different systems, applications, business processes dispersed across an enterprise along with structural changes, different behaviors, and various information systems in an enterprise. Enterprise integration is costly and time-consuming; thus management should be cautious in the design of the project. Enterprise Application Integration (EAI) automates the integration process with less effort than that required with ERP. EAI can serve to connect ERP systems(Jinyoul et. Al,2003) To achieve agility and flexibility in organizations, there should be a greater degree of communication, coordination, and cooperation in human factors as well as information technologies (Fox, 1998) .

There are three ways for starting with ERP. First is to Reengineer the business processes in TEIs before implementing ERP(Altekar ,2009) . Second is directly implement ERP and avoid reengineering. The third option is to reengineer the business processes during implementation of ERP. Each of these have limitations. In the first option, the institutions need to analyze current processes, identify non-value adding activities, redesign the process to create value for the users and then develop, in house applications or modify an ERP system package to suit the institutional requirements. It can serve as a customized solution considering the institution's structure, culture, existing IT resources, users needs and promises relatively less disruption to routine work during the change from legacy to ERP system but it may take a lot of time. In the second option, all the processes of the institutions should conform to the ERP model and the institutions need to change its current work practices and switch to what ERP system provides. This could be feasible in an institution but not at all for a university where the scale of implementation is larger. Many problems like lack of process ownership , cultural issues, users resistance to change may creep and full benefits of ERP system may not be achieved. The third option does not seem to be practical and is likely to cause maximum disruption to existing work. This discussion indicates that there is no perfect solution for starting with ERP implementation.

Irrespective of the approach used, Business Process Reengineering for TEIs requires identification of all the activities involved in institutions. The developers of ERP packages and the institutions willing to use with or without customizing ERP systems must identify what

should an ERP package should offer for TEIs. For this, it is necessary to find out the common services required by all TEIs which are identifying here.

There are many modules that are required in any TEI. These include human resource management, registration, finance, curriculum, examination, results, customer relationship management, inventory management etc. The ERP solution provides a forum where information is entered at one end and can be processed at many ends to gain useful information. The information from one module is to be used in other module. Example is orders from inventory module may need verification from finance module.

However, all these modules are not yet a part of all the ERP solutions used by various TEIs. There is a need to study whether various TEIs are using the ERP solutions with all modules or not. Also it needs to be verified whether the implementation as said by the management is complete or not.

Research approach

From literature survey and advice from domain experts, five main modules are considered for the survey. These are Academic module, HR module, Finance module, Customer Relationship Module and Inventory Module . First is the Academic module which includes all the activities for smooth conduct of students, faculty and various another departments like accounts and academics. Second is the HR module which is needed to handle the information about all the recruitments, promotions and other professional records of faculty and other staff. CRM is required to maintain the detailed information about students and their parents, consultants and vendors for ERP. In order to collect the status of all inventory items from all the departments at a central place , Inventory module is required. All the modules further contained various sub modules.

A questionnaire is designed for the survey of the current status of the various modules used in ERP solutions in various TEIs. The users are asked about the required level of the module implementation and the current level of the five module implementation considered for the survey. The inputs could not be continuous so they were taken on a Likert scale with values from 1 to 5 . Value 1 means implemented less than 20% , 2 means implemented above 20% but less than 40%, 3 means implemented more than 40% but less than 60%,4 means implemented above

60% but less than 80%, 5 means implemented more than 80% but less than 100%. The users include students, faculty, top management and staff from various departments in TEIs. The TEIs are further compared by the type which can be divided into various categories, viz. Universities versus Autonomous Institutions.

The priorities may differ on the basis of type of the TEI. In order to find the relationship , the research question formed is:

R1: Do Universities and Autonomous institutions have the same priority for all these modules or what are the differences between these?

In order to find the answers to above question, the data was collected from 22 TEIs and the results are summarized in next section.

Results and findings

The mean values of the required level of module and the actual level of module is judged. The results are summarized below:

a) Perception gap in various modules

80% of total users rated the priority as highest value 5 as Required level for Academic module

Table 1: Required level of various Modules in Universities and Autonomous Institutions

Academic Module	1	2	3	4	5	Total	Chi Sq.: 76.376
University	2.1%	1.9%	2.1%	11.2%	**82.6%**	100.0%	df: 4
Autonomous Institute	3.4%	1.1%	19.3%	21.6%	**54.5%**	100.0%	Sig.:0 .000
HR Module	1	2	3	4	5	Total	Chi Sq.: 80.603
University	.6%	2.6%	5.0%	11.9%	**79.9%**	100.0%	df: 4
Autonomous	3.7%	3.7%	6.2%	**46.9%**	39.5%	100.0%	Sig.:0 .000

Institute							
Finance Module	1	2	3	4	5	Total	Chi Sq.: 173.181
University	1.0%	1.0%	3.8%	9.3%	**84.9%**	100.0%	df: 4
Autonomous Institute	2.2%	4.5%	4.5%	**59.6%**	29.2%	100.0%	Sig.:0 .000
CRM Module	1	2	3	4	5	Total	Chi Sq.: 21.928
University	.9%	2.3%	4.6%	7.5%	**84.8%**	100.0%	df: 4
Autonomous Institute	2.5%	11.3%	3.8%	10.0%	**72.5%**	100.0%	Sig.:0 .000
Inventory Module	1	2	3	4	5	Total	Chi Sq.: 67.438
University	1.0%	3.0%	5.0%	11.0%	**80.0%**	100.0%	df: 4
Autonomous Institute	15.4%	3.8%	7.7%	16.7%	**56.4%**	100.0%	Sig.:0 .000

Discussion (R1): The above results show that there are significant variations reported in all the modules between University and autonomous institutes. All the five modules are required at a higher priority in Universities as compared to autonomous institutes . the maximum variation is shown in the requirement for the Finance module while the minimum variation is found in Customer Relationship Module. If we consider the opinion of the majority of the users , then the required level for Academic module, CRM module and Inventory module is 100% in both Universities and Autonomous institutes. The requirement for Finance and HR module is 100 % by Universities and 80% by Autonomous institutes. The overall priority is high by the Universities for all the modules considered here as compared to the Autonomous institutes.

Table 2 summarizes the actual level of implementation in various modules in Universities and Autonomous institutes.

Table 2: Actual level of various Modules in Universities and Autonomous Institutions							
Academic Module	1	2	3	4	5	Total	Chi Sq.: 266.261
University	2.4%	4.8%	**51.3%**	15.6%	25.8%	100.0%	df: 4
Autonomous Institute	**47.2%**	4.5%	14.6%	24.7%	9.0%	100.0%	Sig.:0 .000
HR Module	1	2	3	4	5	Total	Chi Sq.: 159.173
University	2.7%	**44.6%**	31.1%	20.1%	1.5%	100.0%	df: 4
Autonomous Institute	**31.7%**	19.5%	30.5%	4.9%	13.4%	100.0%	Sig.:0 .000
Finance Module	1	2	3	4	5	Total	Chi Sq.: 214.700
University	3.3%	**48.3%**	35.8%	8.2%	4.3%	100.0%	df: 4
Autonomous Institute	**50.6%**	5.2%	20.8%	10.4%	13.0%	100.0%	Sig.:0 .000
CRM Module	1	2	3	4	5	Total	Chi Sq.: 216.549
University	3.7%	**54.1%**	26.5%	12.9%	2.9%	100.0%	df: 4
Autonomous Institute	**48.8%**	1.3%	27.5%	13.8%	8.8%	100.0%	Sig.:0 .000
Inventory Module	1	2	3	4	5	Total	Chi Sq.: 76.172
University	22.7%	**44.2%**	22.0%	7.7%	3.5%	100.0%	df: 4
Autonomous Institute	**42.3%**	3.8%	15.4%	28.2%	10.3%	100.0%	Sig.:0 .000

The majority of the users say that Academic module is implemented only upto 60% in Universities while less than 20% in Autonomous institutes. The implementation level of HR,

Finance, CRM and Inventory module is less than 40% in Universities while that is again in the unimplemented stage in Autonomous institutes as indicated by majority of the users.

Conclusion

The success of the ERP system for the TEI can be measured if all the users are able to get everything they think available in ERP system. The aim of the ERP system should be to provide all the facilities in one software. The professional ERP vendors like SAP and PeopleSoft are providing ERP solutions for business organizations but not for Technical Educational Institutions. Many TEIs are using custom developed ERP solutions by many vendors. However, all the TEIs are getting different modules implemented and that too in different ways. So in order to find the common modules required by all the TEIs, the survey has been done. The users in various TEIS gave valuable inputs for the priority of modules to be included in their ERP system. The conclusions from the survey results are that all the TEIs agree for higher priority of implementation for Academic, CRM and Inventory module while they differ for their requirements for Finance and HR modules. Though there is difference in requirement of various modules in Universities and Autonomous institutes, but there is no significant difference in priority by Universities and Autonomous Institutes for academic sub modules. The actual implementation status is also better in Universities as compared to Autonomous institutes. The major module implemented is the academic module.

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