

Examination of Accountable Critical Successful Factors and Impact of ERP over Higher Education Institutions

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Abstract – New information technologies have brought public sector Higher Education Institutions (HEIs) into increased competition, while their government funding in parallel has been continually eroded. In response to these growing pressures, there has been a call for HEIs to improve operational efficiency and to reduce duplication of resources by implementing advanced information systems that span the institution and improve processes. In response HEIs turned their efforts to implementing complex ERP systems. These systems were seen as the solution to address the growing governmental information requirements and improve competitiveness. But do these systems represent a viable proposition for the diverse higher education sector with its traditionally strong and fragmented structure and culture? This paper explores the importance of effective and careful use of communication, change management procedures to handle the often business process reengineering impact of ERP systems can alleviate some of the problems, but a more fundamental issue concerning the cost feasibility of system integration, training and user licenses.

Index Terms – Higher Education Institutions (HEIs), information systems, enterprise resource planning (ERP) systems, critical success factor, business process reengineering.

I. INTRODUCTION

Higher education moved from an elite system to one of mass education, while the student population profile has diversified to include an ever-increasing percentage of part time and mature students. Government intervention and increased demand for education have introduced significant pressure for change on the higher education sector [1], while Government funding has been continuously reduced over the past years [2]. This has led to changes in the governance [3] and in the management of higher education institutions (HEIs). Part of HEIs' strategy to respond to these issues has been to adopt state-of-the-art technology to reduce duplication of efforts and resources, to improve management information provision. Yet the paradox remains that although significant expenditure on management information systems in HEIs has been made, this area continues to be largely unexplored by research - with a few notable exceptions [4]. The Indian higher education sector investing in communication and information technologies p.a, representing 10% of the sector's

total turnover [5]. The arguments supporting ERP implementation in HEIs are indeed seductive.

II. LITERATURE REVIEW

The main aim of ERP system implementations in HEIs has been to integrate different administrative functions into a more systematic and cost effective approach, and thereby gain a strategic advantage. The integration of administrative functions in the HE sector spans the integration of student administration, human resource management, facilities management, and financial systems that have in the past been supported by separate legacy systems [6]. These were "disparate and lead to duplication of resources and services" [7].

While ERP implementation in HEIs is often described as difficult, expensive and risky and has often been considered unsuccessful or ineffective [8], its adoption across the sector, has continued globally. This belief is exemplified by the chief information officer at George Washington University, who believes that integrated information solutions give HEIs competitive advantage, stating that: "...institutions, which are unlikely to switch to integrated information solutions, will find it difficult to retain their market share of students. Students will, sooner or later demand services, offered by other institutions..." [9]. In 2002, 86% of worldwide universities were implementing or intended to implement at least one module of an ERP system [10]. At that time 38% of Australian universities had adopted ERP solutions from a single vendor, 48% had adopted a 'best-of-breed' approach entailing a range of modules from several vendors, and 14% had not implemented any type of ERP modules [10].

III. ERP SYSTEMS IN THE HE SECTOR

Environmental pressures for change on Universities worldwide and continuing decline in per-student government funding and support, globalization and global competition, continuing growth in student numbers, changes in the nature of academic work, increasing competition between institutions, government pressure to improve operational efficiency, and generally diverse and shifting expectations of stakeholders. These substantial and continuing shifts in the sector, demand more efficient management processes [7] and improved administrative operations. In response to government policy

changes, and to various social and economic factors [13], universities have turned to IT as a core facilitator of new strategic directions. More recently, ERP vendors have responded with products tailored to this relatively new market, with many universities, similar to large corporations, increasingly replacing their legacy administrative systems with ERP solutions [7]. According to Fisher [14], HEIs viewed ERP adoption as a method of gaining greater integration of their management systems to better manage increasingly complex operations.

IV. CRITICAL SUCCESS FACTORS IN ERP IMPLEMENTATIONS

The success or the failure of an implementation project depends on who and how defines it. So, it is important to define the notion of success for an ERP system implementation [15]. The success of an ERP implementation project is represented by the project delivery on time and on budget [16], while for HE organization that adopts the ERP system the success is represented by significant improvements of its business processes. J. Esteves and J. Pastor have identified two perspectives on the success of an ERP implementation: an internal one, related to the duration, costs and scope of the implementation, and an external one, oriented towards increasing the client satisfaction and system quality [17]. The concept of critical success factor for an ERP system implementation is well defined in the specialty literature. Here are some of the performed studies and their main focus.

- Inter-dependencies between critical success factors were studied by recording the relevance of the critical success factors as defined by Somers in order to establish the main causes determining the failure or the success of an implementation and the confirmation of a direct relationship between critical success factors.
- Relevance of critical success factors reported to the success or failure of the ERP implementation projects.
- The incidence and the impact of critical success factors during the entire implementation project from the temporal point of view. This paper describes critical success factors for ERP implementations according to the stages of implementation. During the first four-five stages of the project are: the existence of a managing board formed of key-users or super-users, top management support, clearly defined objectives and user training.
- Quantification of relevance and use of degree of critical success factors during each phase of the implementation project: initiation, adoption, adaptation, acceptance, re-utilization, and infusion; the conclusion was that interdepartmental communication and cooperation prevails as relevance degree in four of the six phases [18];
- The incidence of critical success factors in ERP system multi-site implementations, presenting a high implementation difficulty level from the perspective of: business strategy,

system configuration, IT platform and execution management or the incidence of critical success factors in multi-national ERP system implementations [16], confirming the critical success factors universality.

Esteves [17] proposed a unified success factors model (Table 1).

TABLE I: UNIFIED SUCCESS FACTORS MODEL

	Strategic	Tactical
Organizational	Sustained top management support Effective organizational change management Adequate project team composition Good project scope management Comprehensive business process Reengineering Adequate project champion role Trust between partners User involvement and participation	Consultants Appropriate usage of Consultants Empowered steering Committee Adequate training Program Strong communication inwards and outwards Adequate project management Formalized project plan/schedule
Technological	Customizations Adequate ERP Implementation strategy Adequate ERP version	Adequate software configuration Legacy systems

This model divided the critical factors in four perspectives: strategic, tactic, organizational and technological. The organizational perspective focuses on organizational structure and culture and business processes. The technological perspective focuses on technical aspects like hardware and software requirements for configuring an ERP system. The tactical perspective includes communication and interdepartmental cooperation. The analysis of ERP literature shows that the organizational aspects are more important than technological aspects. ERP systems for higher education represent a special case of ERP implementation.

V. CONCLUSION

ERP solutions are very complex software packages. To improve the chance of success, they must be carefully evaluated and selected, needing a proper evaluation and analysis framework. The performed study shows that, in the case of universities, a special attention should be paid to organization and human factors, which are significantly different from companies. University executives and university community must know as much as possible about ERP systems and the ERP project. In order to obtain the quality services for students and collaborators should be a major priority with an ERP system implemented within the university. The results of this study is going to be used in elaboration of an evaluation framework of ERP solutions for university management that will be than applied to some market leader solutions in order to discover the best fitted one for the Indian universities.

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