



A Study of Critical Factors in Enterprise Resource Planning Implementation for Higher Educational Organizations: A Conceptual Framework

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ABSTRACT

The integration of Enterprise Resource Planning (ERP) systems in higher educational organizations stands as a multifaceted endeavor fraught with challenges and opportunities. This research article presents a comprehensive exploration focused on identifying and conceptualizing critical factors influencing the successful implementation of ERP systems within higher educational institutions. Drawing from extensive literature review and expert insights, this study aims to construct a robust conceptual framework that delineates these pivotal factors, encompassing technological, organizational, and human aspects. The framework serves as a guide to elucidate the complexities and interdependencies inherent in ERP implementation, facilitating informed decision-making and strategic planning for educational institutions embarking on this transformative journey.

The significance of this research lies in its contribution to the development of a structured and holistic approach for higher educational organizations planning ERP implementation. The proposed conceptual framework serves as a roadmap, aiding institutions in proactively addressing challenges, harnessing opportunities, and optimizing the benefits derived from ERP systems. By recognizing and comprehensively addressing these critical factors, educational institutions can navigate the complexities inherent in ERP adoption, thereby fostering efficiency, innovation, and improved educational outcomes within their organizational structures.

Keywords: Enterprise Resource Planning (ERP), Higher Education, Implementation Factors, Educational Organizations, Conceptual Framework

DOI Number: 10.48047/nq.2021.19.12.NQ21324

NeuroQuantology 2021;19(12):1127-1132

I. INTRODUCTION

The study titled "A study of critical factors in enterprise resource planning implementation for higher educational organizations with special reference to Punyashlok Ahilyadevi Holkar Solapur

University, Solapur" is a research project that aims to investigate the factors that are critical for the successful implementation of enterprise resource planning (ERP) systems in higher educational organizations, with a specific focus



on Punyashlok Ahilyadevi Holkar Solapur University in Solapur, India.

The study will explore the critical factors that influence the success of ERP implementation in higher educational organizations, such as organizational culture, leadership support, user involvement, training, and communication. It will also investigate the specific challenges and opportunities faced by Punyashlok Ahilyadevi Holkar Solapur University in implementing an ERP system.

The study will use a mixed-methods approach, combining both qualitative and quantitative data collection and analysis methods. It will involve surveying key stakeholders in the university, such as administrators, faculty members, and students, as well as conducting in-depth interviews with selected participants.

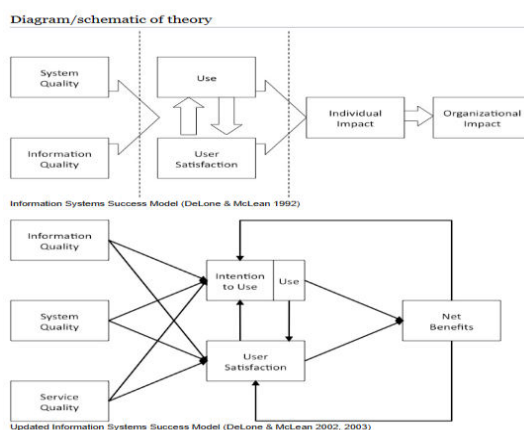
The findings of this study will provide valuable insights into the critical factors that influence the success of ERP implementation in higher educational organizations, and the specific challenges and opportunities faced by Punyashlok Ahilyadevi Holkar Solapur University. These findings will have practical implications for university administrators and policymakers who are planning or implementing ERP systems in higher education institutions.

II. THEORETICAL FRAMEWORK

Frameworks are the tools that assist a researcher in organizing and integrating the different aspects associated with the issue studied in a simple and dependable way to attain the desired results (Montagna, 2005). Frameworks are vital for the researcher as they help to organize and integrate the varied aspects related to the problem in a simplistic way with consistency and ensure that pursued outcomes are achieved (Montagna, 2005). There are various arguments regarding the relevance versus the utilization of frameworks. From the viewpoint of Oats (2006), theoretical frameworks should be used to highlight the main problems concerned with the topic under investigation. There is a need for the development of a theoretical framework to assess the main factors affecting the implementation of an ERP system in a university environment. However, before starting this, it is

very important to study the existing frameworks designed by various academics. The next section will present and discuss these frameworks.

III. DeLone and McLean's IS success model (D&M)



DeLone and McLean's (1992) IS success model has greatly contributed to the literature for the measurement of success in information systems. According to Ballantine et al. (1996), in spite of the fact that DeLone and McLean (1992) reviewed one hundred and eighty studies from academic journals this model was also influenced by the work of Shannon and Weaver (1949) and Mason (1978). These studies covered the period between 1981 and 1987 and were regarded as the first studies that attempted to give some order and parameters for the development of a comprehensive model for information systems (Gable, Sedera, & Chan, 2008). Systems quality, information quality, use, user satisfaction, individual impact, and organisational impact were identified as the main categories of information system success. Figure 3.6 presents and demonstrates the relationship between these categories. It was suggested by some researchers that "temporal and causal" types of dependencies existed between these relationships (Seddon&Kiew, 1994; Ballantine et al., 1996; Myers, Kappelman, & Prybutok, 1997; Seddon, 1997).

DeLone and McLean (1992) are of the opinion that impact can be considered as the signal that the information system has provided the user with a better understanding of decisions when related to their context. Impact indicates decision-making and productivity of the user has been improved. Usefulness is the extent to which an individual believes the use of

the specific system can enhance work performance (Seddon, 1997).

Bernroider (2008) investigated the role of IT governance and its impact on the success of ERP implementation as it was difficult to assess the economic and organizational benefits in "DeLone and McLean's updated model." The study took into consideration the success of ERP implementation at the usage stage, after ERP is implemented. "DeLone and McLean's updated IS success model" also considered social actors as did Bernroider (2003). Ballantine et al. (1996) further added to the "DeLone and McLean model" and proposed a new 3D version that improved the model by dividing IS success into technical development, deployment of the user, and the delivery of value to the business.

IV. CRITICAL SUCCESS AND RISK FACTOR THEORY

The critical success and risk factor theory (CSRF) has been used for ERP project management (Sullivan, 2009). CSRF theory focused on finding the remedies for failures or delays by comparing and analyzing previous projects and making comparisons between the organisations and industries, levels of management, project teams and IT teams (ERP IT Toolbox, 2007; Hawari and Heeks, 2010). Ifinedo and Nahar (2007) identified information quality, system quality, individual impact, organisational impact, vendor or consultant quality, and workgroup impact, in their model for ERP project success. The majority of the KSFs for ERP implementation are perceived from a risk factor perspective. A model of risk factors in ERP implementation could also include environment, organisational context, information system and project specific elements (Scott and Vessey, 2002). The success and risk factors in an ERP implementation have been analysed on the basis of implementation related ERP specific factors (Gattiker, 2002) along with the long term and short term factors (Ghosh and Skibniewski, 2010). Success and risk factors include, management and leadership, environment, complexity of project, project team, communication, selection of software, training, time, personal capacities and capabilities, finances, IT infrastructure, and expectations (Dowlatshahi, 2005; Gattiker,

2002; Ghosh and Skibniewski, 2010; Graham, 2009; Omerzel, Biloslavo, and Trnavčević, 2011; Pratt, 2009; Sprenger, et al., 2010a; Tsang-Kosma, 2010). Li Liao (2006) considers how external help can improve the chances of a successful implementation. The organisations who implement the new IT system can have knowledge about the experiences of others, products offered by the vendors, services of consultants, and can compare these available resources along with the requirements of the organization. The results from this comparison can be used to help the organisation achieve its objectives. Similarly, the vendors, consultants, and employees who have the knowledge about the requirements of an organisation and its processes can provide customized solutions in the shortest time to make the implementation successful. CSRF theory is a helpful model which can introduce match and compare the already available knowledge of implemented projects with the requirements of the organisation. Therefore, the experiences of other projects of similar nature can be utilized to have the best implementation strategies and opportunities in the specified organisation (de Millo, 2005). The implementation of new IT systems depends upon the hierarchical structure; leadership styles; management; and prevailing culture, of the organisation. Although, an understanding of the organisation and the knowledge of the system cannot be considered as a guarantee for ERP success, these factors must be considered as the KSFs in ERP projects (Chen, 2009; Li, et al., 2006). In order to apply the CSRF theory to a specific project and develop specialized solutions, the definition of project success must be agreed by all the stakeholders (Aldayel, et al., 2011; Frantz, Southerland, and Johnson, 2002). Success of a project can be attributed to the measurement of the outcomes including the return on any investment. However, this definition differs from project to project or organisation to organisation (Frantz, et al., 2002; Sedera, Gable, and Chan, 2004). CSRF analysis focused more on the managerial and IT level in the majority of the projects (Dues, 2010; Graham, 2009; Lapham, 2009; Pollock, 2003; Pratt, 2007). However, it is considered that as subject of CSRF analysis, the the technical team

only has a limited influence on project success (Khatib, 2010; Sullivan, 2009), however the importance of end users on system success has been emphasized (Dredde and Bergdolt, 2007). Therefore, the stakeholders and their influence must also be considered as an important KSF for the success or failure of an ERP implementation project.

V. PROCESS MODEL

The process of ERP implementation exerts pressures on the development of the initial business plan, configuration of the software, and improvements to the business processes. Hence, the implementation of an ERP system must be considered as a business project rather than a technological initiative (Markus et al., 2000). Shanks (2000), developed a phased ERP implementation model on the basis of fifteen case studies. The phases were: design, implementation, stabilization, continuous improvement, and transformation. The design phase was focused on the selection of the ERP system, identifying the scope of the project and the development for the architecture of the system. Configuration and implementation of the software was part of the implementation phase which was a complex process and if not properly managed could reduce the performance of the organisation. The stabilization phase resolves the problems and issues from the initial implementation and organisational performance is enhanced (Shanks, 2000). Ross (2007), argues that the majority of organisations stay in the phase of stabilization for long periods which can extend to years. In the continuous improvement phase the system is continuously maintained, improved and upgraded which finally goes to the transformation phase (Shanks, 2000). Ross (2007) maintained that only a small number of organisations reach the transformation phase and large ERP system implementations sometimes involve a variety of cycles through the model for every module in the ERP system (Ross, 2007). The ERP implementation process model was revised by Markus and Tanis (2000). The phases of their model included; chartering, project, shakedown, and onwards or upwards. The chartering phase included the development of business plan, selection of ERP system,

appointment of project manager, and approval of budget and schedule. The project and shakedown phases were similar to the implementation and stabilization of the Ross model. Similarly, the onward and upward phases were similar to the continuous business improvement and transformation phases of the Ross model.

The two process models provided the basis for the phased process model proposed in this research which is presented below in figure 3.9. When detailed out, the planning phase of the process model has the broader business focus from the Markus and Tanis chartering phase and the technical project aspect from the Ross design phase. The phases of implementation and stabilization are taken from the Ross model. The fourth phase is termed as the improvement which has the feature of incremental as well as radical improvements to the business process. The current study enabled the detailed examination of the ERP implementation lifecycle map and helped the researcher to identify the key success factors across all the the phases of the ERP implementation lifecycle.

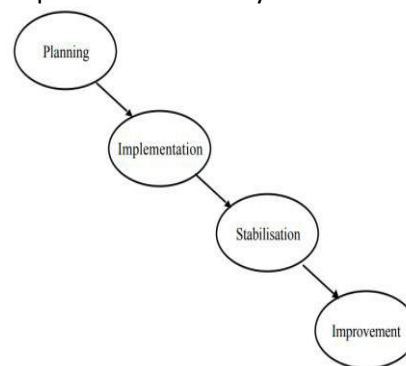


Figure : Process Model

A review of the literature also suggests that most existing ERP research focuses on selection and implementation, not on post-implementation impact, although several studies suggest that ERP systems go through a post-implementation breaking-in phase, in which the organisation may not experience the hoped-for performance. However, the ultimate impact of ERP systems on organisations once implemented and 'shaken down' has not been as thoroughly researched (Gattiker and Goodhue, 2005; Somers, Nelson, and Ragowsky 2000).

Even though ERP has been developed, evolved and implemented around the world for almost two decades, Helo, Anussornnitisarn and Phusavat (2008) note that there are still many recently published reports of difficulties in its implementation. Many have reported that ERP implementations failed to achieve the organisation's targets and expectation, because a project is not complete without post-implementation evaluation (Finney and Corbett, 2007).

As a response to this need, in this research the ERP lifecycle within HEIs has been categorised into pre-implementation, implementation and post-implementation phases and the key success factors have been prioritized according to their importance while mapping the factors to these phases.

As a guideline for the present study, the researcher has focused on the following research objectives:

- 1) Identification of the factors which influence the ERP implementation,
- 2) Prioritization of the factors according to their importance for the successful implementation of ERP,
- 3) Examination and mapping of the influential factors for different lifecycle phases and stages to achieve a successful ERP implementation.

VI. CONCLUSION

DeLone and McLean's IS Success Model categorizes success into system quality, information quality, use, user satisfaction, individual impact, and organizational impact. It emphasizes service quality and stakeholder expectations. Critical Success and Risk Factor Theory (CSRFT) focuses on identifying solutions for failures or delays by analyzing comparisons between different projects and organizations. It considers factors like information quality, system quality, individual impact, and organizational impact. Process Model views ERP implementation as a business project, with phases like planning, implementation, stabilization, and improvement. Each phase has specific key success factors. This framework provides a

roadmap for HEOs aiming to implement ERP systems effectively.

VII. REFERENCES

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Sujitkumar Karande is present seeking his Ph.D. in the B. P. Sulakhe Commerce College from Punyashlok Ahilyadevi Holkar Solapur University, Solapur, Maharashtra, India. He had accepted his master's in computer application from Shivaji University, Kolhapur in the year 2009. His research regions for the most part incorporate computer science, business

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