



**Influence of Top Management Support as an important factor for the ERP Implementation in Higher Education Institutes of Pakistan**

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**Abstract-** During the last several years, adoption of Enterprise Resource Planning (ERP) systems in Higher Educational Institutes of Pakistan is increasing. However, the literature review reflects that very limited research is reported on adaptation of ERP systems in the context of higher educational institutions of Pakistan. ERP implementations are slightly different than other information system implementations. Thus, in this paper an attempt is made by authors to analyze the influence of Top Management Support during ERP system implementation in the context of higher educational institutions of Pakistan. This research is based on considerable literature review. The findings of this study reveal that in the context of universities of Pakistan and other developing countries the Top Management Support is an important factor and reflects positive influence on ERP success. This paper is part of a larger research effort that aims to contribute in understanding and analyzing success factors in the context of higher educational institutes of Pakistan.

**Keywords:** Enterprise Resource Planning, Top Management Support, Higher Educational Institutions, Pakistan.

**1 INTRODUCTION**

Evaluating the success and failure of ERP is difficult, because of the complex description of organization and ERP as well (Davenport, 2000). Nonetheless, this system can produce wide range of benefits to users of different organizations (Shang and Seddon, 2002). Because of the high failure rate of ERP implementation, researchers focus on analysis and understanding of CSF that helps in the successful implementation of ERP systems (Shah, 2011; Singh and Wesson, 2009).

Studies on ERP implementation focus primarily on developed countries; whereas, less attention has been given to developing countries (Shanks, 2000). According to Sawah *et al.*, (2008), the developing countries are implementing ERP systems, however, very limited research has been conducted in order to analyze the success and failure of these systems in developing countries. Pakistan also hold a huge potential market for ERP systems. Many organizations in Pakistan are thinking or are in the process to implement ERP systems. In this regard Higher Education Commission (HEC) in Pakistan has implemented few pilot projects for ERP implementation in different Universities of Pakistan.

Thus, the aim of this study is to identify, analyze and evaluate the impact of Top Management Support (TMS) for the successful ERP implementation in Higher Educational Institutes (HEI) of Pakistan. In doing so, it is expected that this study may provide support to the policy makers of these institutes for the proper implementation and use of ERP system. Top Management Support is the most quoted CSF in literature for the ERP implementation and is accepted as one of the key elements in the successful implementation of ERP systems (Bhatti, 2005).

The structure of this paper is outlined as follows. In section 2, the review of ERP implementation in developing countries, HEI and in general is presented. In section 3, the research methodology used for this research is discussed. Section 4 discusses the importance of TMS during successful implementation of ERP. The following section contains the results and discussion. In the end, conclusions are drawn.

**2 LITERATURE REVIEW**

The literature varies in factors used for successful implementation of ERP. Generally, there is no single factor or set of factors. The blend of factors helps analyze the success in ERP implementation.

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Critical Success Factors (CSF) can be defined as the factors needed to ensure the implementation of ERP successfully. The characteristics of CSF include:

- The activities that distinguish between success and failure or the differentiations between incremental performance and innovative output (Banfield, 1999).
- CSFs are useful as they provide a clear vision and guidance about where to focus during planning and deployment of ERP systems (Shanks *et al.*, 2000).

The commitment of top management is considered as essential and important factor while implementing ERP systems, and is reported in literature a number of times. The sections 2.1, 2.2 and 2.3 cover its importance in ERP implementation in general, in HEI and in developing countries.

## 2.1 ERP implementation in General

Holland and Light (1999) designed a CSFs taxonomy based on two categories of factors named as Strategic factors and Tactical factors. From the list of Strategic factors, commitment from top management was considered as one of the most important factors that must be there in order to implement ERP systems. Markus & Tanis (2000) describes that the roles of the CSFs tend to be different in various phases of ERP, and considered TMS as a single factor which plays its part in all phases. Shanks (2000) sets up eleven CSFs for the successful implementation of ERP by performing two case studies at Australia and China. The CSF are clear goal and objectives, TMS, change of business process, project management, team formation, the presence of champion, minimum adjustments, expert vendors and consultants, data accuracy, best people and training and education. Esteves and Pastor (2001) proposed a CSF based model, in which complete factors are divided into various categories, and from those categories TMS is one of the major strategic organizational factor. Somers and Nelson (2001) identified 22 success factors based on the stage of ERP implementation. The factors for the initial four-five stages include top management commitment, education and training, goals, visions and objectives and a strong team of super and key users. The study mainly focused on the activities performed in each stage of ERP implementation and the role of users on those stages. Dong (2001) discusses the TMS and its influence in the implementation of enterprise systems. Al-Mashari *et al.* (2003) presented a classification of CSFs of ERP implementation. In the establishment stage the success factors are listed as leadership and top management, plans and vision and selection of ERP. Umble *et al.* (2003) listed CSFs on the basis of preceding studies made on ERP implementation, and practically observed the factors while applying them in a case study of ERP implementation. The authors

considered TMS as being necessary during ERP implementation. Somers and Nelson (2004) made one of the most wide range studies for determining the CSF in ERP implementations. The factors includes: commitment from top management, champion, consultants, steering committee, relationship of vendor and customer, vendor support and vendor tools. Verville *et al.* (2005) reported ten CSF for successful ERP implementation using three case studies. The CSFs related to the people involved in the project include top authority, sensible selection of team members, approach to partnership, involvement of users and user buy-in. Nah and Delgado (2006) make a complete list of CSFs for the successful implementation of ERP. Based on the research made by Markus and Tanis (2000), the authors categorized these factors into seven areas, (a) scope, vision and plans (b) management of change (c) team formation, abilities, and rewards (d) Project Management (e) Communication (f) support of top management (g) Analysis of system, technical implementation, and selection. Al-Fawaz *et al.* (2008) state that top management's support and the appropriate ERP selection are two concluded CSFs for the success of ERP implementation. Huang (2010) concluded a ten year analysis of the top 10 CSF for the implementation of ERP through literature review. The CSFs include: Top management commitment, team composition, training and education, management of project, clear scope and goals, change management, business process reengineering, champion, communication, and choosing the right package and supplier.

## 2.2 ERP Implementation in Developing Countries

Information technology implementation in Pakistan is growing with pace of time. As a result, several public and private sector organizations in Pakistan such as banks, oil and gas sectors, HEI and other organizations have implemented various IT applications to solve their organizational problems (Nizamani *et al.*, 2012). International Monetary Fund (IMF) listed 149 countries as Developing and 34 countries as developed countries (IMF, 2013). In Pakistan like other developing countries, ERP are purchased from foreign ERP vendors and those ERPs typically represent western practices (Moosbrucker and Loftin, 1998). Developing countries are experiencing numerous difficulties while implementing and using ERP systems. In Pakistan implementation of ERP is being considered a very difficult task, as the culture of Pakistan is entirely different from the culture of those countries where these systems are designed and implemented. Therefore, as compared to many developed countries, the implementation level of ERP in Pakistan stands very low and there is considerably less reported literature in context with ERP implementation in Pakistan (Nizamani *et al.*, 2013; Shad *et al.*, 2011;

Shah *et al*; 2011; Anjum *et al*, 2010; Kanwal and Manarvi, 2010). Hence, it is important to analyze the success factors for developing countries separately.

Huang and Palvia (2001) analyzed ERP success in developing countries and examined the CSF of Egyptian organizations' ERP implementation. They listed certain organizational factors as important which consist of people management, risk management, change management and project management which can be considered collectively as top management. Themistocleous *et al* (2002) analyzed Enterprise Application Integration (EAI) in global organizations and identified TMS as one of the factors that is needed to be considered while implementing ERP. Roldan *et al* (2002) examines four Philippines business enterprises as case studies and analyze the factors for the successful implementation of ERP in the Philippines, the factors includes top management support, organizational culture, user education, vendor support and team involvement during ERP planning and implementation. Zhang *et al* (2003) conducted their study in China, whose culture is different from Europe and America, where most ERP vendors develop systems. The important factors identified from the study were support from management, reengineering business processes, effective project management, software and hardware, training and education and accuracy of data. Singla and Goyal (2006) investigated the failure factors in the ERP system implementation in two major production companies in India. The factors are listed as lack of support from top management, inappropriate user's training and education, poor project management, poor design of system, weak integration and technology planning. Woo (2007) experiences an ERP implementation in a large Chinese company called ElectronicCo from the initial implementation problems till the ultimate success. Author presented six CSF for the ERP implementation success in Chinese companies: senior management support, project team, adequate education and training, project management and infrastructure for communication. Ibrahim *et al* (2008) listed the CSF in ERP implementation process. The results are tested in an oil company in Libya. Three groups of factors and sub-factors include (a) Strategic Factors: TMS, clear business goals, legacy systems, (b) Personnel Factors: education, participation, project team and attitude of the staff and (c) Organizational Factors: project management, process management, computer skills, strategy of change management, IT maturity, empowerment, organization communication and culture. Anjum *et al* (2010) carried out a research survey in Oil and Gas Development Company (OGDC) of Pakistan and identified the success factors for ERP Implementation. The research concludes CSFs which are listed as the commitment of top management, the

timely accomplishment of project, user acceptance and adequate training. Abdelghaffar and Azim (2010) collected the data through surveys and interviews with the protagonists of the big companies in the Egyptian market and listed various factors including top management's commitment. Garg (2010) listed and validated the CSFs for ensuring successful implementation of ERP systems for the retail business in India. The factors include: Education and training, Product and package selection, TMS, Project management and Project team.

### 2.3 ERP Implementation in Higher Education Institutes

Implementation of ERP in higher education represents a special case. Research on this field is an emerging area. There has been little attention on the CSF of ERP in higher education (Pollock and Conford, 2004). In Pakistan, the public sector Universities generally provide the educational and training services to the citizens on no-profit basis. The University's faculty and staff interact through ERP system for institutional activities, and students also interact for information retrieval and best e-learning (Moon, 2007). However, Universities always face several problems to run and upgrade their academic and administrative affairs (Abugabah and Sanzogni, 2010). ERP systems are often the biggest software application adopted by universities with significant amounts of budgets assigned to it. However, modest research has been carried out about ERPs in a university environment (Abugabah and Sanzogni, 2010; Rico, 2004; Swartz and Orgill, 2001). As ERP is designed into certain modules, this is problematic for universities to adopt these packaged systems because somewhat institutions need to change their business processes to fit into these systems (Von Hellens *et al*, 2005). Usually, ERP implementation is considered as a very complex project in HEI and the university administrative staff and other stakeholders must have the complete support from top management. Usually TMS is considered as the single important factor in early stages of project's life cycle (Bingi *et al*, 1999) and also considered as the most critical factor in ERP implementation (Ifinedo, 2008; Kamhawi, 2007).

Based on the literature review of higher education sector ERPs, Rabaa'i (2009) identified 12 CSF that includes commitment from top management, planning and visioning, project management, change management, team formation, BPR, training, selection of system, consultant relationship and selection, communications, system integration and evaluation of system after implementation. Bologna *et al* (2009) investigated the ERP projects implemented in the HEI of Europe, Australia and U.S.A and identified the CSF

in which involvement of management was the most important factor. Sabau *et al* (2009) designed an evaluation framework for ERP implementation in higher education and focused on TMS as an important factor. ALDayel *et al* (2011) made a case study and identified success factors for higher education in Saudi Arabia and listed TMS as an important factor from technical perspective.

### 3. MATERIALS AND METHODS

In order to search the empirical data related to TMS, the authors identified the relevant papers of Management Information System (MIS) from a large collection of relevant Journals between year 1999 and 2014. In doing so, the CSF were identified from the following Journals:

- Business process management journal
- IEEE software
- Global Journal of management and business research
- International Journal of Enterprise Information Systems
- Journal of Issues in Information Systems
- Open Information Systems Journal
- Information Systems Journal
- International Journal of Information Technology & Information Systems
- Communications of the Association for Information Systems

Searched: Abstract and Title	
Scholarly Articles Search	Scholarly Database Search
ERP implementation success factors	CSF "AND" ERP Systems "AND" Developing Countries "OR" Higher Education
Critical Success Factors of ERP implementation in Higher Education	Top Management Support "AND" ERP Systems Implementation
ERP Success Developing Countries	CSF "AND" Enterprise Resource Planning
Enterprise Systems Success factors Developing Countries	ERP Implementation "AND" Success
Enterprise Resource Planning Success	ERP Success "AND" Higher Education "AND" Top Management Support
Critical success factors of ERP systems	Enterprise Systems "AND" Success "AND" Developing Countries "AND" Top Management Support
Top Management Support in ERP implementation success	Top Management Support "AND" ERP Success

**Table 1. Articles and Database Search Terms**

A number of databases and conference proceedings were also searched in addition to the journals mentioned above. These databases contain journals belonging to the field of Information Systems. Research articles were selected based on the search

terms and keywords listed in table 1. The final selection of article for inclusion or exclusion was dependent upon researchers after reading the article. If article contained the related success factor for ERP implementation, then it was selected for additional review, otherwise excluded from study.

The preliminary literature review yielded 120 articles. The articles that were not related to ERP success after reviewing full text of the article were eliminated from further reviews. In total, 41 articles were selected for final review, from which 9 articles specifically focused on CSF of HEI, 15 articles focused on the success factors of developing countries, and remaining 17 articles covered CSF in general business firms across the world.

### 4 TOP MANAGEMENT SUPPORT

Numerous studies support TMS as the necessary ingredient for ERP implementation (Dezdar and Ainin, 2011; Seddon *et al.*, 2010; Elbanna, 2013, Ram *et al.*, 2014) and suggest that it is needed throughout implementation, mainly in early stages (Bingi *et al.*, 1999). ERPs are extremely integrated systems, so its implementation requires complete cooperation from top management and its staff. The organization must have support from top management which provides financial, moral and ethical resources for ERP implementation, and make sure to achieve goals in time (Sabau *et al.*, 2009). Al-Mashari *et al* (2003) found that the commitment and support of the top management must be there for all stages of ERP implementation and does not stop at the initial stage. They must ensure the people in that organization that this project is highly prioritized.

Any ERP project before its implementation needs an approval from top management (Hossain, 2011; Kerzner, 2013). Top management must consider this implementation as the top priority (Wee, 2000; Dezdar and Ainin, 2011). This implementation effort needs total involvement from top management by means of support and allocated resources (Davenport, 2000). Top management also acts as a mediator between the senior management and stakeholders to solve political conflicts where necessary, solving disputes and providing clear signal to any uncertainty (Holland and Light, 1999). Top management needs to look beyond the technical aspects and consider organizational needs for successful implementation (Chen, 2001). They should also possess strong leadership for demonstrating its devotion towards the ERP project, and achieve success in its implementation. The organization may face lack of benefits provided by ERP, or a complete implementation failure if there is a poor management or be deficient in resources (Beheshti, 2006).

Top management must plan new goals and objectives, and this new system must be explained and communicated to employees. New organization rules, roles and responsibilities must be communicated to staff, and the progress of project must be monitored constantly (Bingi, 1999). Overall, during the ERP implementation process, the top management must concern ERP implementation in four contexts which include change management, process management, people management and project management (Esteves *et al*, 2002)

In university environment, support from top management is also a critical factor (Rico, 2004). Top

management is establishing the organization's agenda for members of the university, politics, power relations and external factors. The ERP project must be well organized which requires the establishment of a strategic decision making in university. It should include members of the administrative structure and the structure of services should have a clear and complete understanding of the strategic plans about university's development and its main objective. It is also necessary to know very well the overall integration plan. This factor is widely recognized as most necessary factor for ERP implementation across countries. The table 2 lists the corresponding references from literature for TMS.

CSF	Corresponding References for Higher Education ERPs	Corresponding References for Developing Countries ERPs	Corresponding References for ERPs in general
<b>Top Management Support</b>	Allen <i>et al</i> (2002), Nielsen (2002), Rabaa'i (2009), Bologaet <i>al</i> (2009), Sabau <i>et al</i> (2009), ALDayeet <i>al</i> (2011), Al-Hudhaif(2012), Alenezi <i>et al</i> (2013), Mathias (2014).	Huang and Palvia (2001), Themistocleouset <i>al</i> (2002), Roldanet <i>al</i> (2002), Zhang <i>et al</i> (2003), Singla and Goyal (2006), Woo (2007), Ibrahim <i>et al</i> (2008), Upadhyay and Dan (2010), Abdelghaffar and Azim (2010), Anjumet <i>al</i> (2010), Asemi and Jazi (2010), Garg (2010), Shah <i>et al</i> (2011), Almajed and Mahyaw (2013), Khattak <i>et al</i> (2013).	Holland and Light (1999), Parr <i>et al</i> (1999), Markus and Tanis (2000), Shanks (2000), Dong (2001), Nah <i>et al</i> (2001), Somers and Nelson (2001), Al-Mashari <i>et al</i> (2003), Umbleet <i>al</i> (2003), Verville <i>et al</i> (2005), Nah and Delgado (2006), Finney and Corbett (2007), Ngai <i>et al</i> (2008), Kronbichler <i>et al</i> (2009), Huang (2010), Al-Fawaz <i>et al</i> (2011), Dezdar and Ainin, (2011), Amini and Sadat Safavi (2013).

**Table 2: Corresponding References for Top Management Support**

**5 RESULTS AND DISCUSSION**

Identifying CSF for HEI of Pakistan is relatively new area of research. Understanding the needs of successful ERP implementation is essential because a huge budget is invested on it, and only little research is made in order to analyze its success. This research is made in Pakistan which is a developing country and all major vendors of ERP belong to developed country (Rush *et al*, 2014). Pakistan, like other developing countries in Asia, is relatively new to ERP market and facing number of problems such as poor policies of government, inadequate IT infrastructure, and lack of ERP experience (Shad, 2011).

The review of empirical literature supports “Top Management Support” as the most frequently cited factor in ERP success (Ngai *et al*, 2008). The support of top management is also considered as important in literature and shows consistency with the work of Amini and Sadat Safavi (2013), Huang (2010) and Finney and Corbett (2007).

While considering the factors of developing countries the TMS is also supported as an important factor by Asemi and Jazi (2010) and Ibrahim *et al* (2008). Iftikhar *et al* (2011), while analyzing CSF of ERP implementation in Pakistan business industry, listed TMS as one of the important factor. TMS is also supported by Anjum *et al* (2010); whereas authors analyzes CSFs of telecommunication, engineering, oil and gas sector of Pakistan. This factor is also included by Nizamani *et al* (2013) as an independent factor in their conceptual model in order to evaluate the success of ERP systems in HEI of Pakistan.

**6 CONCLUSION, LIMITATION OF STUDY, AND FUTURE RESEARCH**

Based on literature review of secondary scholarly articles, an important success factor i.e. the influence of Top management commitment and support is analyzed for ERP implementation in universities of Pa. This factor is analyzed based on its importance and maximum frequency of citations in MIS literature.

The identification of this factor and its importance for HEI of Pakistan suggests numerous future research areas, including, but not limited to following:

- A survey or a case study should be planned to analyze the applicability of TMS in various universities of Pakistan, and to observe how this factor affects the success and failure of ERP implementation in university environment.
- Evaluate other important factors that need consideration for successful ERP implementation in Pakistan.
- Analyze the importance of TMS in developing countries and compare its importance in developed countries as well.
- Analyze and determine whether this factor has equal importance in other business sectors of Pakistan as it has in HEI.

The major limitation of this study is the difficulty to generalize the examined contents and articles, specifically when there are very few articles on developing countries and a little research in context of Pakistan. Most of the CSF identification is made in developed countries (such as USA). Some factors that may be important for a developed country may not have as importance in developing country like Pakistan.

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