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An Investigation of the Factors That Impact Users Satisfaction in ERP Implementations

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Ph.D Symposium

23rd & 24th March 2009

Abstract

Despite that enterprise resource planning (ERP) systems have proved to provide organizations with the opportunity to integrate various functionally oriented information systems, organizations will not gain the benefit expected unless these systems are implemented successfully. Many organizations have experienced difficulties in realizing their advantage and a numbers of ERP projects have been considered unsuccessful. The ERP literature has reported that many ERPs' users were not satisfied with system and "users' resistance" was identified as a main factor for ERP failure. This research investigates the factors that impact user satisfaction in ERP implementations. A conceptual framework that determines the critical factors which influence users' satisfaction in the ERP implementation will be developed. The proposed framework can be used as a decision-making tool to support management of the organizations when taking decisions regarding the implementation of ERP.

1. Introduction

Enterprise Resource Planning (ERP) is an enterprise-wide information system that integrates and controls all the business processes in the entire organization (Nah and Lau 2001). An ERP system enables an organization to integrate all the primary business process in order to enhance efficiency and maintain a competitive position (Shehab *et al.*, 2004). However, without successful implementation of the system, the projected benefits of improved productivity and competitive advantage would not be forthcoming.

Many IS researchers have argued that the main reason of ERP system implementation failures is because user resist rather than embrace the new ERP systems (Zviran *et al.*,

(Holsapplem *et al.,* 2005; Holsapplem *et al.,* 2005). Additionally, users may have negative expectations of implementation and using an ERP system, based on their characters, knowledge, and experience.

The ERP literature has extensively discussed the challenges of implementing ERP systems (e.g. Soh *et al*., (2000); Al-Mashari *et al.,* 2003; Shehab *et al.,* 2004; Zhang *et al.*, 2005) however there are few studies that have examined the ERP users' perspective, particularly the key factors that contributes to user's satisfaction. This study, therefore, investigates the critical factors which influence users' satisfaction in the ERP implementations. A conceptual framework for successful users' satisfaction in the ERP implementations will be developed.

2. Related Literature

Several research studies have identified various important benefits the ERP systems bring to organizations. O'Leary (2000) stated that an ERP system integrates the majority of the business processes and allows access to the data in real time. Furthermore, ERP improves the performance level of a supply chain by helping to reduce cycle times (Gardiner *et al*., 2002). There are also some intangible benefits that an organization may enjoy by implementing an ERP system including, better customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, improved information accuracy and improved decision-making capability (Siriginidi, 2000).

Despite the extensively mentioned benefits of ERP systems, organizations commonly face a hostile attitude from potential users who resist the ERP system implementation

process (Aladwani 2001). ERP implementation in a company affects the whole organisation. Most of the times the adoption of such an integrative package requires reengineering of business process (Al-Mashari *et al.,* 2003). In order to consider as success, an ERP implementation, has to be accepted by the employees, who will be the users of the systems. This has also been identified as a critical success factors for ERP deployment the users' acceptance of the systems (Umble *et al.*, 2003).

Customisation of ERP is possible but big modifications are complex, costly and difficult in upgrading (Chen, 2001). Furthermore, the selection of the vendor plays a vital role for the successful implementation of ERP. Because, vendor should support the company from the planning stage up to life time maintenance, there should be trust and cooperation between each other.

3. Research Model and Hypotheses

Figure 1 shows the research model for this study. User characteristics have a significant influence on ERP system success because of their central role in ERP implementation. Five user-related characteristics are examined: age, education level, IS experience, user involvement & participation and training. Organizational factors represent the top management support, organizational culture and business process reengineering. Vendor factors describe vendor and customer partnerships, vendors' tools and Vendor support. ERP Innovative characteristics include compatibility, complexity and task relevance. User satisfaction is the dependent variable in this study and it described by information quality and systems quality.

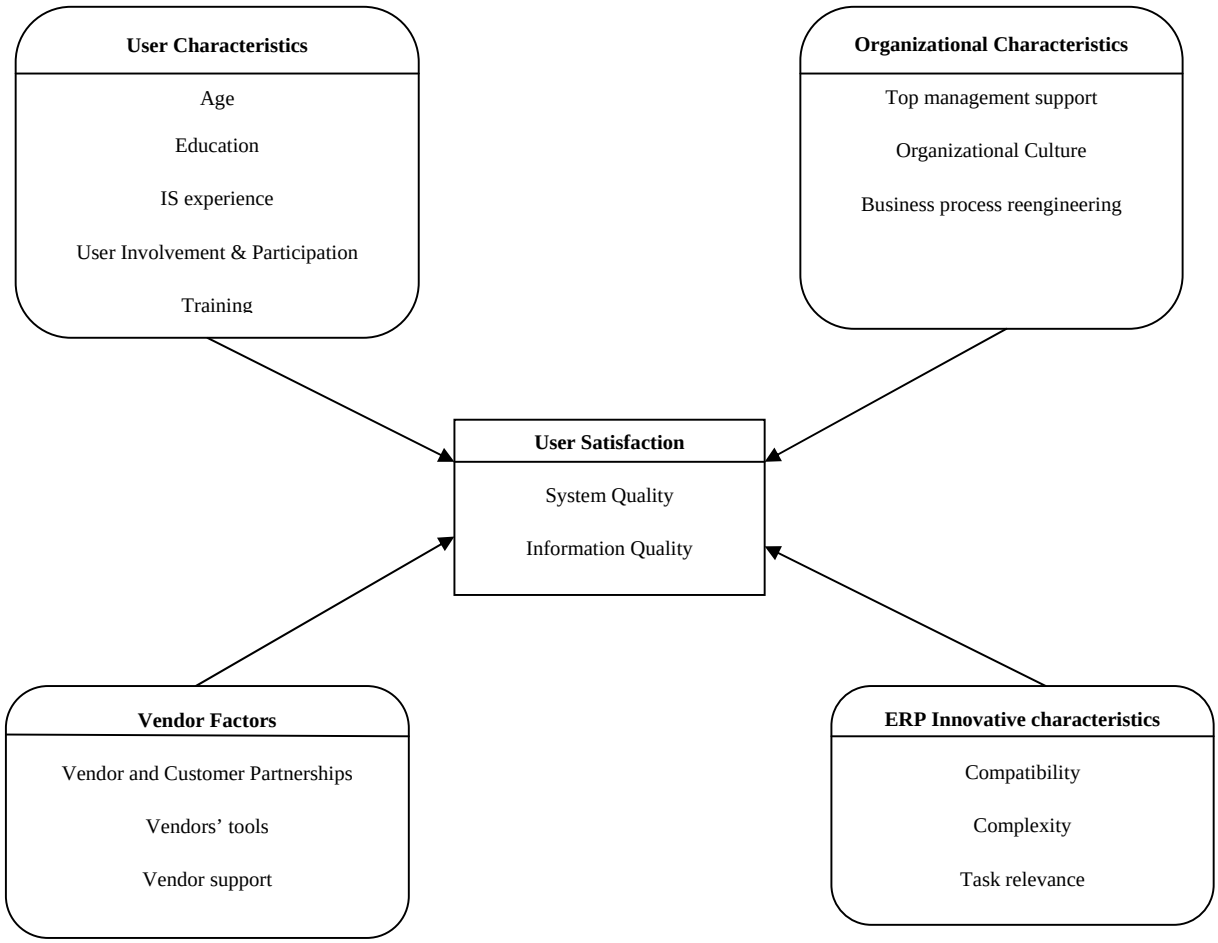

Figure 1 Research Model

3.1 User Characteristics

3.1.1 Age

Zviran *et al.,* (2005) indicated that there is a relationship between age and user satisfaction. Older people are more likely to fear new technology and be hesitant to change (Holsapplem *et al.,* 2005). However, younger have often been introduced to information technology (IT) earlier. They might be more easily satisfied by relatively new IS implementations such as ERP systems.

Hypotheses1: ERP user satisfaction is greater among younger users than among older ones.

3.1.2 Education

Users with more formal education tend to use computers more often and have greater IT satisfaction (Holsapplem *et al.,* 2005). Therefore, it is predicted that ERP user satisfaction positively correlates with education level.

Hypotheses2: higher educated users increase ERP user satisfaction.

3.1.3 IS experience

Zviran *et al.,* (2005) indicated that there is a relationship between computer experience and user satisfaction. A more experienced user has more knowledge of specific problems and consequently is generally able to employ an information system Such as ERP more effectively (Holsapplem *et al.,* 2005).

Hypotheses3: Higher level of user IS experience increase user satisfaction.

3.1.4 User Involvement & Participation

User involvement increase user satisfaction and acceptance by developing realistic expectations about system capabilities (Esteves et al., 2003). User involvement is essential because it improves perceived control through participating throughout the whole project plan.

Hypotheses4: High levels of user involvement and participation increase user satisfaction.

3.1.5 Training

Training users to use ERP is important because ERP is not easy to use even with good IT skills (Woo 2007). Nah *et al.,* (2003) argued that sufficient training can assist increase success for ERP systems. However, lack of training may lead to failure. *Hypotheses5: High levels of training increase user satisfaction*.

3.2 Organizational Characteristics

3.2.1 Top management support

Top management support has been identified as the most important success factor in ERP system implementation projects. Al-Mashari *et al.,* (2003) argued that top management support does not end with initiation and facilitation, but must extend to the full implementation of an ERP system. Aladwani (2001) found that users perception of top management support has a positive effect on user satisfaction.

Hypotheses6: High levels of top management support increase user satisfaction.

3.2.2 Organizational Culture

Zhang *et al.,* (2002) revealed that adapting the implementation to the prevailing cultural style was one important cause of project implementation failures. The difference of cultures between Western countries where ERP systems are developed and where these ERP systems are implemented makes culture an important determinant of implementation success. Thus, organizations and western ERP vendors should adapt ERP packages to fit organization's culture to ensure ERP implementation success.

Hypotheses7: Organizational culture has a negative impact on user satisfaction.

3.2.3 Business process reengineering

Organizations should keep the ERP package as much as possible and reengineer their business processes to conform to the package (Gardiner *et al*., 2002). Furthermore, organizations that reengineers to best practices will experience a smoother implementation which will increase users' satisfaction.

Hypotheses8: Business process reengineering will increase users' satisfaction.

3.3 Vendor Factors

3.3.1 Vendor and Customer Partnerships

A good partnership between the software vendor and customer organization is positively associated with ERP systems implementation success (Somers and Nelson 2004). Also, the good relationship between the ERP buyer and vendor should enhance the satisfaction of the ERP users.

Hypotheses9: Vendor and Customer Partnerships have a positive relationship with user satisfaction.

3.3.2 Vendors' tools

Vendors provide business process modeling tools, templates for industry-specific business practices, bundling of server hardware with ERP software, and combined packages of software, services, and support (Somers and Nelson 2004).

Hypotheses10: The Vendors' tools will have a positive with user satisfaction.

3.3.3 Vendor support

According to Soh *et al.*, (2000) ERP systems require continual investment in new modules and upgrades to add functionality to achieve better fits between business and system. Consequently, vendor continues support is an important factor for users' satisfaction.

Hypotheses11: Vendor support will have a positive relationship with user satisfaction.

3.4 ERP Innovative characteristics

3.4.1 Compatibility

Compatibility refers to the degree to which an ERP system matches with the current user's work styles (Rogers, 2003). He argued that compatibility is associated strongly with user satisfaction.

Hypotheses12: The degree of compatibility of ERP systems has a positive on ERP user satisfaction.

3.4.2 Complexity

Complexity is the degree to which a certain innovation is difficult to understand and use (Rogers, 2003). It is also suggested that the perceived complexity of an innovation leads to resistance due to lack of skills and knowledge (Rogers, 2003). This resistance to new technologies leads to lower satisfaction.

Hypotheses13: The perceived degree of complexity of ERP systems will have a negative relationship with user satisfaction.

3.4.3 Task relevance

Task relevance refers to the extent of congruence between what is provided by ERP systems and user task requirements (Soh *et al*., 2000). Because ERP systems are designed to support organizations' and users' needs for integrated information and processes, task relevance has a strong relation with user satisfaction (Soh *et al*., 2000).

Hypotheses14: ERP user satisfaction positively correlates with task relevance.

3.5 User Satisfaction

DeLone and McLean (2003) focused on the user satisfaction of the information system. This factor was viewed as a potential factor for evaluating a systems success. Moreover, User satisfaction can be defined as the extent of which users believe the information system available to them meets their information and system requirements. DeLone and McLean (2003) found that the user satisfaction was related to the system quality, information quality.

3.5.1 System Quality

The relationship between System quality and user satisfaction found the association to be significant (DeLone and McLean 2003). System quality will be measured in terms of ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance.

3.5.2 Information Quality

The organizational context is influencing the actual information quality, while the user satisfaction will be influenced by the quality of the information that the ERP system produces (DeLone and McLean 2003). Information quality will be measured in terms of accuracy, timeliness, completeness, relevance, and consistency.

4. Conclusion

This paper reviewed the related literature and examined the key factors that contribute to the satisfaction of ERP systems. A research framework was developed to integrate these critical factors. The framework can support management of organizations when taking decisions regarding the implementation of ERP.

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