Spring 4-1-2015

Enterprise Resource Planning of Business Process Systems

Majed Al-Mashari
KSU, Saudi Arabia, malmashari@yahoo.com

Husam Al-Mosheleh
KSU, Saudi Arabia, majed@ksu.edu.sa

Follow this and additional works at: http://aisel.aisnet.org/ukais2015

ENTERPRISE RESOURCE PLANNING OF BUSINESS PROCESS SYSTEMS

Majed Al-Mashari and Husam Al-Mosheleh
Dept. of Information Systems, CCIS, King Saud University, Riyadh, Saudi Arabia
Email: majed@ksu.edu.sa

Abstract

In ERP implementation, customization should usually be undertaken to ensure a fit between business process systems and current organizational processes. This paper focuses on the issues associated with ERP customization and how large organizations deal with them. Information presented in this paper is based on a literature review of relevant resources as well as interviews with implementation and consulting teams of a major ERP vendor. Customization issues addressed in this paper are related to organizational information needs or requirements, cost, technical complications, and lack of knowledge and experience within implementation teams. These factors, if not considered adequately in the customization phase, may lead to ERP implementation failure.

Keywords: Customization, ERP Implementation, Implementation failure, Information systems, Business process.

1.0 Introduction

The use of ERP systems in the corporate world is increasingly becoming a core resource for promoting the competitive business advantage of organizations in the modern society. This is in part true given the common association of ERP systems with enhanced efficiency in managing organizational resources and workflow in an organization. It can also reduce costs and increase the speed of decision making (Al-Mashari et al., 2003). On the contrary however, in spite this claimed competitive value of ERP systems to businesses, the successful implementation of such systems remains a challenging engagement for most organizations. According to available literature, this challenge to the successful implementation of ERP systems by organizations has been attributed to the standard nature of ERP system design, which limits their reliable use for the otherwise specific or unique needs of the organization (Law et al., 2010).

As such, the ultimate success of implementing ERP systems in organizations with unique requirements depends on various factors, one of which is the extent that the

organization commits in customizing the ERP system to best suit its business requirements. Thus, it is especially a challenge for large organizations with more than 1,000 users, who usually have specific requirements and can afford to customize the standard software. This is not only due to the unique requirements or operations of the organization as a whole, but also that individual business units or departments within large organizations are marked with different ERP system requirements. Of particular significance here, however, is the fact that ERP systems are sufficiently marked with technical concepts, an element that limits the capability for customization by organizations without the consulted input of ERP system experts (Luo and Strong, 2004). In ERP implementation, vendors usually recommend to configure the components of the standard software to meet the business needs. The modules can then be personalized to suit the organization requirements or preferences. The last thing that should be considered is customizing the standard system where it should be avoided unless it is an absolute necessity. This paper focuses on the issues facing the customization of ERP systems and how large organizations are dealing with these issues.

2.0   Methodology

The material presented in this paper was gathered from surveying litreture related to ERP implemintation and the issues facing the cutomization of ERP systems. Further, information were collected by the means of conducting meetings with implementation teams in one of the major ERP venders in Saudi Arabia. The implementation teams were responsible for the whole implementation process with the aid of partener consultants. Another set of meetings took place with consulting teams under the same ERP vendor. Their role is to gather the organization's requirements and recommend the best modules to implement. Most of the implementation and consulting teams have more than 10 years of experince in ERP implementation in the Middle East.

3.0 ERP Customization

As part of the best practices offered by market ERP vendors as well as consulting firms may not be able to deliver models appropriate for all processes across all industries. This means that it remains such a challenge to attain and realize expected connections over all activities and databases appropriate for a certain business

process, unless the ERP system either altered or appended. In other terms, basic function misalignment can be seen when ERP functionality does not match with the particular organizational requirements (Elragala and Haddara, 2013). In this sense then, the use of customization of an ERP system has been the procedure to resolve the function misalignment in respect to the given organization. Although ERP customization is not clearly defined as a concept, customization has been categorized by developers with relation to complexity and difficulty (Dittrich et al., 2009). In order to completely resolve misalignment in different organizations, there has been two common approaches deployed which are core and the non-core customization. Adopting the non-core customization entails the detailed modification of the interface of a query/reporter writer facility or an add-on module. Adoption of core customization implies that the base code forming the module is revised. The two approaches refer to a broad variety of ERP adaptation (Chou and Chang, 2008). Implementation team in ERP vendors recommend that customization should be avoided mainly due to the technical aspects of implementing, maintaining and supporting customized ERP systems. They also conclude that customized systems often fail to meet the desired outcomes intended by large organizations. Part of the responsibility in failed customization projects rely on consultants who should have a strong business case to persuade organization to redesign their business processes whenever suitable, instead of customization. The lack of business process management (BPM) efforts contributes usually to the high failure of customized ERP implementation. Consultants argue that convincing organizations to adapt a BPM approach is not a simple task, due to the fact that most senior management do not favour the BPM methodologies such as Business Process Reengineering (BPR). From a management prospective, it is usually of a high risk to change business processes that have been proven effective. However, manipulating a software to align with the business process seems a rationalistic approach.

In ERP implementation, consultants usually recommend to configure the standard system by selecting the appropriate modules or packages. In this phase, organizations choose the modules that suit their business needs or requirements. Consideration of legacy systems and IT infrastructure is addressed in this phase. Moreover, compatibility with other systems is examined and appropriate measures are taken including replacement of duplicate functions in these systems. Then, personalization takes place by both the organization and the implementation team. Information

regarding business process workflow, roles and responsibility has to be specifically identified by the organization. The implementation team then design the chosen preferences of the system, for example the user interface, setup document formats and language preference. Lastly, if the desired outcomes are not met, customization should be looked at.

4.0 Issues Facing Customization of ERP Systems in Large Organizations

There are various issues facing customization of ERP systems, and, thus, it is very important to perform a thorough evaluation to eliminate gross failure of ERP implementation. These issues include organizational needs, cost, technical issues and lack of knowledge, which will be discussed throughout the paper.

4.1　Organizational Needs

The customization teams should determine the main and specific organizational requirements. Defining information and system requirements critically attribute to the ultimate success of ERP implementation (Ahmed and Cuenca, 2013). These are requirements at both the managerial and operational levels of an organization in various organizational areas. Requirements across functional areas vary from one organization to another due to the nature of business and competitiveness which leads to different ways of doing things. Consequently, implementing the standard ERP system may lead to a substantial degree of failure. Moreover, standard ERP systems have been criticized with inflexibility and not properly aligning with business requirements (Light et al., 2002). In order to initiate effective and efficient ERP customization, information needs issue should be considered in terms of completeness in order to establish the specific organizational requirements, hence customize the system properly.

4.2　Technical Issues

Another ERP customization issue is integration suitability. The customization team should ask themselves about the manner in which the proposed ERP system will eventually integrate with the already existing information systems. An instant changeover from the old system to an all new ERP system without a proper plan is

likely to contribute a grand implementation failure. It is therefore necessary to ascertain that the newly deployed ERP system is in a position to integrate properly with the already existing information systems (Mandal and Gunasekaran, 2003). Therefore, with a customized ERP system, the challenge is more significant. For example, an organization in Saudi Arabia faced large complications in integrating their customized ERP system with their billing system, which would have been far less complicated and cost effective if they have implemented the standard version. Furthermore, system faults in post implementation may arise such as database errors, and process workflow errors may occur in later stages of implementation due to less time spent in testing the customized modules. On the other hand, the research and development teams in ERP vendors spent more time in developing and testing modules before standardization resulting in less technical complications. For example, a large government organization in Saudi Arabia customized a number of processes in an ERP solution which led to many unexpected errors after implementation and took plenty of time and effort to overcome due to the difficulty of tracking these errors, though the customization was done by the ERP vendor itself.

4.3   Other Issues

Suitability is a large factor in ERP customization, mainly in relation to cost and lack of knowledge. Cost is always a key factor in any system implementation, and it is the aim of organizations to reduce cost without sacrificing quality. Customizing an ERP solution always drive the cost of the system due to the time and effort spent in changing and adding certain features to the standard version (Borovskiy and Zeier, 2009). Research shows that 65% of ERP projects exceed their budget and overrun schedules (Amid et al., 2012). Moreover, future upgrades to the existing system will likely lead to more costs, since the customized modules need to be customized again to be compatible with the new updates. The consultant team from the ERP vendor stated that the cost of customization can be double or triple the cost of the standard system, depending on the number and nature of functions to be added or altered. Another issue that need to be clearly addressed is the lack of knowledge and experience in the standard ERP system, which consequently will lead to unnecessary customization. Many companies rely on their consultants to provide the best solution that meets their requirements. In many cases, inexperienced consultants may lead to excessive and unnecessary customization that is already available in the standard

system (Rothenberger and Srite, 2009). Furthermore, research established that 35% of ERP implementation led to gross failure and 70% failed to accomplish the desired organizational benefits (Amid et al., 2012). According to the consultants, most customized ERP systems fail to deliver the anticipated benefits due to the high expectations of top-management in organizations with regards to the considerably large investment in customizing standard ERP.

5.   Dealing with Customization Issues

In large organizations, business efficiency and competitiveness can be achieved through the successful implementation of ERP systems (Law et al., 2010). This implies that they cannot allow mistakes of failing ERP implementation, and, thus, they must deal with them appropriately. To begin with addressing informational needs, an organization defines clearly its system requirements. This helps in making it clear to the ERP vendors about the necessary modules and the specific functionalities they should offer. The ERP software is thus customized to fit in the organizational system requirements. Moreover, unless ERP systems specifically satisfy business requirements, organizations will lose their competitive advantage (Law et al., 2010).

Again, concerning integration suitability with customization issues, large organizations develop an information systems policy describing the new systems integration approach. The policy usually describes the steps which will be observed in order to bridge the gap that may result when migrating to a proposed ERP system or when integrating existing systems. In fact, most of large corporations in Saudi Arabia have an advantage over smaller ones with regards to implementing customized systems in the sense that large corporations usually have a clearer integration policy and well documented information systems. This helps to cover the possibility of disrupting routine system operations, and thus sustaining competitiveness. Generally, code customized information systems allow for a smoother integration (Luo and Strong, 2004).

Lastly, implementation teams in an organization should spend more time investigating the proposed standard ERP system to avoid duplicate functions. Large organizations rely on customization experts to take part in the implementation of the system. Customization experts focus on implementing the specific workflow modules into the ERP system (Kassem and Schult, 2008). An experienced implementation team would

have a better chance to convince the management to keep system changes to a minimum level (Rothenberger and Srite, 2009).

6. Conclusion

ERP systems have become a critical infrastructure in increasing competitiveness of business organizations. ERP systems have many capabilities of enhancing the efficiency and effectiveness of every unit in an organization. However, though ERP systems are highly standardized, some organizations with unique requirements consider customizing ERP systems. On the other hand, organizations should spend more efforts in exploring business process change. Customization is not always the optimal approach for aligning ERP with business processes. Large organizations should balance between BPR and customization, therefore reducing the gap between business processes and standard ERP. There are several customization issues which may lead to success or failure of an ERP system implementation. Large and well-structured organizations have an advantage over small ones since they have properly laid down structures for resolving these customization issues hence maintaining their competitive edge.

References

Ahmed, M., and Cuenca, R. (2013) *Critical success factors for ERP implementation in SME,* Robotics and Computer-Integrated Manufacturing, 29 104–111.

Amid, A., Moalagh, M., and Ravasan, A., Z. (2012) *Identification and classification of ERP critical failure factors in Iranian industries*, Information Systems, 37 227–237.

Al-Mashari, M., Al-Mudimigh, A. and Zairi, M. (2003) *Enterprise resource planning: A taxonomy of critical factors*, European Journal of Operational Research, 146 352-364.

Borovskiy, V. and Zeier, A. (2009) *Enabling enterprise composite applications on top of ERP systems*, In Proceedings of Services Computing Conference. 7-11 Dec (Singapore), pp 492 – 497.

Chou, S., and Chang, Y. (2008) *The implementation factors that influence the ERP (enterprise resource planning) benefits*, Decision Support Systems, 46 149–157.

Elragala, A., and Haddara, M. (2013) *The Impact of ERP Partnership Formation Regulations on the Failure of ERP Implementations*, Procedia Technology, 9 527 – 535.

Kassem, G., and Schult, R. (2008) *ERP Self-Adaptive customizing*, In Proceedings of Information and Communication Technologies: From Theory to Applications, 7-11 April (Damascus), pp. 1-5.

Law, C., Chen, C. and Wu, B. (2010) Managing *the full ERP life-cycle: Considerations of maintenance and support requirements and IT governance practice as integral elements of the formula for successful ERP adoption*, Computers in Industry, 61 297–308.

Luo, W., and Strong, D. (2004) *A Framework for Evaluating ERP Implementation Choices,* IEEE Transactions on Engineering Management, 51 322-333.

Light, B., Holland, C. and Wills, K. (2001) *ERP and best of breed: a comparative analysis*, Business Process Management, 7 216–224.

Mandal, P., and Gunasekaran, A. (2003) *Issues in implementing ERP: A case study*, European Journal of Operational Research, 146 274–283.

Rothenberger, M. and Srite, M. (2009) *An Investigation of Customization System Implementations in ERP*, IEEE Transactions on Engineering Management, 56/4 663-676.

Y. Dittrich, S. Vaucouleur, and S. Giff (2009) *ERP customization as software engineering: knowledge sharing and cooperation*, IEEE Software, November/December 41-47