Enterprise Resource Planning Implementation Failure: A Case Study from Jordan

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The economic growth in the Jordanian market led multiple business owners to refer to information technology in general and Enterprise Resource Planning (ERP) in particular, in order to improve their business aspects, flow of information and customer satisfaction. Researchers have been studying the use of ERP systems for many years, and have stated its many advantages and disadvantage. They have also listed that some critical factors such as commitment issues, poor project management and poor knowledge transfer could lead to a failed ERP implementation process, which resulted in business owners refraining from ERP system. This paper discusses the literature and evolution of ERP systems along with the failure factors contributing to implementation failure, and finally discusses the findings on the case study conducted on four Jordanian companies.

Key words: ERP, Implementation, failure, factors, case studies, Jordan.

INTRODUCTION

Different sized companies are now turning towards information technology in general and Enterprise Resource Planning (ERP) in particular to improve their performance and productivity to be able to provide their customers with faster responses and better services, and be more in control of their accounting, supply chain and inventories.

Chyan and Yi-fen (2010) defined Enterprise Resource planning (ERP) as a coordinating calculation system of enterprise that has been designed for automation of material currents information and financial supply in all application in an organization on informative base.

One of ERP systems main strengths is the integration financial, human resources, sales and purchasing, manufacturing and finally inventory in one system to help information flow through a company easily; along with an easy access to archived data and the ability to back all the information on a single database. However, some problems may occur during the implementation process that will cause it to fail and consequently cause the company to abandon the idea of implementing any ERP systems.

This paper studies the critical factors, which caused ERP implementations to fail in four Jordanian companies of different sizes that were implementing three different ERP systems.

LITERATURE REVIEW

Multiple researchers such as (Kumar and Van Hillgersberg, 2000) have defined ERP systems as “configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization”. Tadjer (1998) identified it as “One database, one application and a unified interface across the entire enterprise”. Furthermore, (O’Leary, 2001) described ERP systems as “computer-based systems designed to process an organization’s transactions and facilitate integrated and real-time planning, production, and customer response”. Any system has to possess some key characteristics to qualify for true ERP solutions. Table 1 shows the characteristics of ERP systems as explained by Uwizeyemungu and Raymond (2005). Figure 1 shows the concept of the ERP system as illustrated by Davenport (1998).

According to (Rashid et al., 2002), companies started developing and designing systems that would control their inventory in 1960’s. Then, they started developing Material Requirements Planning (MRP) systems in
Table 1. ERP Characteristics as explained by (Uwizeyemungu and Raymond, 2005).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration</td>
<td>Interconnections between functions and hierarchical levels. Interaction between the various processes.</td>
</tr>
<tr>
<td>Completeness (generic function)</td>
<td>Wide range of functions. Applicable to various types of firms. Connectivity with the outside.</td>
</tr>
<tr>
<td>Homogenization</td>
<td>Unique data referential. Uniformity of human-machine interfaces. Unity of the system’s administration.</td>
</tr>
<tr>
<td>Real-Time</td>
<td>Real-time update and consultation.</td>
</tr>
<tr>
<td>Adaptability (flexibility)</td>
<td>Capability to follow rule and organization changes (made possible by parametering).</td>
</tr>
<tr>
<td>Openness (Evolutionary)</td>
<td>Modularity. Portability.</td>
</tr>
<tr>
<td>Transversality (process oriented view)</td>
<td>System designed in regard to the business processes necessary to achieve objectives. Focus on value rather than authority flows.</td>
</tr>
<tr>
<td>Best practices</td>
<td>System imbeds best practices in the field.</td>
</tr>
<tr>
<td>Simulation</td>
<td>Business processes can be simulated.</td>
</tr>
</tbody>
</table>

Figure 1. The concept of the ERP system as illustrated by Davenport (1998).

1970’s to plan product or parts requirements according to the master production schedule. 1980’s involved companies developing systems called manufacturing resources planning (MRP II) to optimize manufacturing processes by synchronizing the materials with production requirements. ERP systems were finally introduced to the market in 1990’s and 2000’s to integrate business processes including manufacturing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, and transportation to provide accessibility, visibility and consistency across the enterprise. Figure 2, therefore summarized the ERP evolution.

Siriginidi (2000) listed several advantages for implementing ERP systems such as better customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, improved information accuracy and improved decision-making capability. Yet with all the advantages behind implementing an ERP system, its disadvantages caused it to undergo several drawbacks. Yen et al. (2002) identified its high cost as a disadvantage that prevented
small businesses from setting up an ERP system, they also identified the privacy concern within an ERP system and lack of trained people as a disadvantage that may affect ERP’s efficiency. Multiple issues arise while implementing an ERP system. Marsh (2000) identified the failure factors including top-down or consultant-driven implementations, IT department-driven implementations, or implementations where the ERP is seen as a quick technological fix to problems within the operation of the firm, rather than as a strategic investment. Table 2 summarizes the critical factor of ERP implementation according to (Shehab et al., 2004).

METHODOLOGY

One of the main reasons ERP implementations fail is due to choosing a system that doesn’t meet the company’s basic yet specific requirements. Selecting an ERP system to match these necessities should involves a proper business process reengineering and business process mapping to be conducted prior to deciding which system to implement, in order to eliminate processes which don’t add value or reinvent those, which were being wrongly done, to avoid the need for lengthy and expensive customizations, while provoking proper communication between the top management, the users and the consultants, and finally after deciding on the proper system a full implementation plan should be set.

Critical factors contributing to ERP implementation failure

Implementation problems

Implementing an ERP system requires hiring experienced consultants who will study the business processes to determine the feasibility of adopting an ERP system, the proper ERP system to be installed, test the system to make sure all of the company’s requirements have been fulfilled, and finally train the users on how to use the system. In some cases, the specified implementation period might not be met due to action plans not being properly drawn, not allocating the correct number of resources to see the implementation process through, not enough user training, and customizations ordered by the users either taking more time than originally planned or not being doable. For example according to (Davenport, 1998a; Mendel, 1999), the implementation of the SAP R/3 system on average takes about one year to one and a half years. Some have even exceeded three years. During this long implementation period, software and user specification change and the technicians who are implementing the package must constantly adapt and make adjustments in order to accommodate these changes.

Cost problems

There are two types of costs entangled with adopting an ERP system. The first is evident costs represented in the full cost of installing the system, while the other is hidden cost. (Slater, 1998; Soh et al., 2000) specified training costs, integration and implementation costs, data conversion and data migration, high consulting costs, and time frames not being met are hidden costs which are usually underrated and overlooked. According to Wheatley(2000) an EPR system has an average total cost of ownership of $15 million but rewards the business with an average negative net present value of $1.5 million.
Table 2. Critical Factors of ERP Implementation (paper comparison).

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Validations</th>
<th>Critical factors of ERP implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holland and Light (1999)</td>
<td>Yes. Two case studies</td>
<td>Strategic factors, such as the overall implementation strategy. Tactical factors such as technical software configuration. Project management variables. Critical impact of legacy systems upon the implementation process. Importance of selecting an appropriate ERP strategy.</td>
</tr>
<tr>
<td>Markus <em>et al.</em>, (2000a)</td>
<td>No</td>
<td>Simple structure of organizations. Operate in one or a few locations.</td>
</tr>
<tr>
<td>Marsh (2000)</td>
<td>Yes. Nine case studies</td>
<td>Success factors include: Cross-functional team approaches, Organizational experience of similar scale IT or organizational change projects. Deep understanding of the key issues relating to ERP implementations. Failure factors including: Top-down or consultant driven implementations, IT department driven implementations Implementations where the ERP is seen as a quick technological fix to problems within the operation of the firm, rather than as a strategic investment.</td>
</tr>
<tr>
<td>Francalanci (2001)</td>
<td>No</td>
<td>Technical size and organizational complexity</td>
</tr>
</tbody>
</table>

**Change Management and Project Management**

Change management is an approach to transitioning individuals, teams and organization to a desired future state. Since the reason behind implementing a new ERP system is to improve the organization's performance and rate of returns by improving its employees’ performance. This can be a major change for a company, especially when the implementation process possesses poor project management and end users, who have never used an ERP in the past and/or have no knowledge of what the system can do for them.
According to Creasey (2007), project management and change management are two key disciplines required to bring a change to life, because:

i. Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing.

ii. Change management is the process, tools and techniques used to manage the people-side of change to achieve the required business outcome by incorporating the organizational tools that can be utilized to help individuals make successful personal transitions resulting in the adoption and realization of change.

**System Customization**

In some cases, ERP systems must be modified in order to meet the company’s requirements, this puts additional time, effort and cost on the implementation process. Lucas *et al.* (1998) said that “...either the organization has to change its procedures, compromise on processing needs satisfied, or modify the package” applies to ERP systems directly.

Because customization is considered as part of a development effort, it needs to be tested many times to make sure that it doesn’t contain any bugs. This means setting up a testing environment and in cases where bugs are present re-coding the customization and retesting. This will also include multiple customization upgrades with every new system release.

**Data Migration**

Data migration is the process of reassigning data between storage types, formats, or computer systems. It is a crucial consideration for any ERP system implementation. Most companies use spread sheets to keep track of their financials and inventory before converting to ERP systems; which means that data must be converted into another format in order to be used in the newly installed system. However, some mistakes such as hidden information, or data not being fully migrated might occur during data migration due to failure to approve and test the data to be migrated.

**Training**

According to Zornada (2005), training is significant in an ERP implementation project not only to adapt users to the new ERP system but also to help in the organizational change process. Furthermore, getting people educated/trained and keeping them informed throughout the implementation process must be addressed to achieve the benefits of an ERP system (Dorobat and Năstase, 2010).

Training might be one of the factors contributing to ERP implementation failure because it requires budgeting, scheduling and commitment from the company’s side along with an experienced consultant to give the training to the end user. Below are several training failure reasons contributing to ERP implementation failure:

**Top management:** Top management’s commitment to the implementation process might be compromised when it comes to allocating time and money to training. This results in users not getting properly trained on the system, and not fully understanding the ERP’s important to improving their performance.

**Consultants:** Consultants’ failure in delivering proper training is traced back to neglecting to conduct a users’ needs study prior to starting the training. According to (Dorobat and Năstase, 2012) the purpose of this analysis is to understand what to present and how to deliver the information, what is the number of users to be trained, their locations, the number of days for each course, the number of courses to be delivered, and the number of trainers needed.

**The users:** When the idea of implementing an ERP system in a company is first presented to users, they subconsciously fear of losing their jobs as a result of not fully understanding the system’s concept, which results in resistance to change and commitment to training problems. It might also lead users to obstruct the training session in any possible way.

**Go live and support**

The final step in any implementation process is going live. This is usually done after the data have been migrated, the system tested and the users have received the proper training, which results in their full awareness of the system’s functions, i.e. understanding the system and knowing how to use it on their own.

Yet after every Go-live step comes support, which usually includes providing the users with training on every add-on module bought, helping the users in any encountered problem, and upgrading and maintaining the system.

**Case studies**

Case studies are usually used to emphasize the topic on hand. The purpose of a case study is ‘to tell a big story through the lens of a small case’ (Yin, 2003; Tan, 2004).
Table 3. ERP failure factors

<table>
<thead>
<tr>
<th>Failure factors</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-reliance on heavy customization</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Poor Go Live Support</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor knowledge transfer</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor project management effectiveness</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Unclear concept of the nature and use of ERP system from the users' perspective</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrealistic expectations from top management concerning the ERP System</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Users’ resistance to change</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Case studies are undertaken to focus on what is typical and this then leads on to meaningful generalization and scientific abstraction, which would be prevented by uniqueness (Majumdar and Gupta, 2001).

A case study was conducted on three companies in the Jordanian market. These companies differ in size, and accordingly in their ERP implementation problems; however, their similarities exist in the fact that they all deal with customers.

Why Jordan?

The World Bank’s classification of Jordan as a country of “upper-middle income”, and its reputation as a safe and stable country in a turbulent region were enough reasons to attract various investors to set foot, and build companies of various industries. This economic boom left the Jordanian market with multiple options and ideas to choose from in order to achieve their desired output of integrated information, reduced and controlled inventory, speed information and improved customer satisfaction.

Business Brief

Four companies of different size and different choice of ERP systems to be implemented were studied. Company A is a fast growing business, experienced in selling biomedical machines and supplies to clinics and hospitals, whereas company B sells beverages, company C is specialized in delivering card payment and ATM management services to its customers and finally company D is a leading fast moving consumers goods in the Jordanian market.

It was found while observing the factors, which led to ERP implementation failures in these companies, and interviewing the users, that various reasons were behind ERP failure in many stages of the implementation process. These reason are portrayed in Table 3.

RESULTS AND DISCUSSION

As can be seen from Table 3, Company A has the highest rate of failure factors followed by company D in comparison with companies B and C. Yet three of out four companies share two important failure factors, which are poor go live support, and poor project management. Furthermore, poor knowledge transfer was common in companies A and C and unclear concept of the nature and use of ERP system from the users’ perspective were similar failure factors in companies A, C and D, over-reliance on heavy customization was found in companies B and D, and finally unrealistic expectations from top management concerning the ERP System and User’s resistance to change were common in companies A and D.

Company A

As earlier mentioned, company A is a growing business; therefore, the installed ERP system was for small to medium sized companies. However, poor knowledge transfer (Training), poor project management, top management’s failure to explain the importance of automating the work, poor Go live support and finally user’s resistance to change, lead to the implementation process to fail.

Company B

As can be seen in Table 3, company B relied heavily on customizing the software that would help convey all the required transaction into the installed ERP system. Poor quality of customization, unresolved system bugs and insufficient testing, along with poor Go live support and poor project management resulted in poor ERP system performance.

Company C

The reasons behind the ERP implementation failure in this company were poor Go live support, unclear concept of the nature and use of ERP system from the users’
perspective, poor knowledge transfer and poor project management. Combined these factors resulted in employees not properly entering data into the system and not being properly supervised and trained on how to use the system.

Company D

Poor communication between the top management and its staff resulted in unclear concept of the nature and use of ERP system from the users’ perspective and their resistance to change followed by unrealistic expectations from top management concerning the ERP System; along the company’s over-reliance on heavy customization cause the implementation process to fail.

This paper examined the factors leading to a failed ERP implementation process in the Jordanian market. It found that any successful implementation process relies both on the top management and the hired consultants. The top management should have been more open with its employees regarding the reasons behind implementing an ERP system, their expectations and their goals. As for the hired consultants, it revealed that a proper business process mapping should have been conducted prior to starting the implementation process to determine the correct ERP system to be installed, set up a proper training plan to meet every employee’s job role, and finally pay more attention to change management and on going, post go live support.

The results of the case study revealed that each company had its own set of failure factors depending on the relation between the installed ERP and company’s requirement, vision and goals. It also showed that collaboration between the top management and the hired consultant is essential for the success of the system’s implementation process. It also highlighted the common failure factors between the companies, which would have been avoided had the hired consultant paid more attention to them.

Conclusion

ERP systems are sets of integrated applications that provide easy access to information, improve organizational performance and customer support. They also enhance the flow of information between the company’s departments through user’s access permissions. Information can never be lost when using ERP systems because they can be backed up to a server and restored when the need arises.

Despite the benefits of implementing an ERP system, it may result in employees feeling threatened that the systems replaces them and subsequently lose their jobs, which causes them to become resistant to the change, instead of understanding that such systems could make their jobs easier with less paper work and more focus on producing efficient flow of information and improved customer satisfaction.

Any implementation process depends on a full collaboration between the top management, end users, and the hired consultants to be considered as successful. It entails being transparent about the apparent and hidden costs, any delays that may occur due to customization and obstacles that arise along the way. Moreover, to avoid implementation failures, the consultants should conduct a full business process mapping and reengineering, manage the project well and come up with a training program to ensure good knowledge transfer.

As a conclusion, this paper discussed the critical factors of ERP implementation failures, along with presenting the findings of the conducted case studies. It revealed that these factors were in fact a main reason for the failure of ERP implementation process in these four Jordanian companies in spite of their different sizes, hiring four different consultants and installing different types of ERP systems.

REFERENCES


