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The Challenges and Benefits of Enterprise Resource Planning (ERP) System Implementation: A Case in Malaysian Manufacturing Firm

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Abstract

Enterprise Resource Planning (ERP) system is a very costly, complex, and advanced information system. Implementing this system in companies from less-developed countries is arguably more challenging as compared to companies from well-developed countries. The objective of this study is to examine the ERP system implementation process from a Malaysian perspective. The study aims to identify the issues and challenges experienced by a Malaysian manufacturing company during the ERP system implementation process. This study is also interested in examining how the challenges affect the benefits gained from the ERP system implementation. A qualitative approach was employed in this study where eight managers and their subordinates were interviewed. The findings demonstrate that cost constraint and insufficient training are the main challenges faced by the company. On the other hand, the findings indicate that the primary benefits gained from the ERP system implementation include a significant improvement in the stock management system, data collection, report preparation and communication process. Furthermore, the ERP system also improves the quality of data and subsequently improves the quality of the decision-making process among managers.

Keywords: *Enterprise Resource Planning (ERP) System, ERP Challenges, ERP Benefits, Manufacturing Firm, Malaysia.*

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Introduction

Enterprise Resource Planning (ERP) system is commonly known as a highly complex information system (Davenport, 1998). Despite its complexity, this system is the preferred business solution in today's business world. The ERP system is recognised as multi-module transaction-based application software that helps organisations to manage vital parts of the business. The system is also known for its primary function in increasing the effectiveness of a business information system, thus, maximising the competitive advantages for its users (Davenport, 1998; Suhaimi, et al., 2016). The ERP system is widely used by large, medium, and small companies to integrate business processes into a single centralised system. The system is designed to integrate various modules such as human resources, finance, logistics, material management, and production planning. Many organisations are gradually implementing the ERP system to ensure the smoothness of their business processes (Kongetsidis et al., 2008). The implementation of ERP system in a business assists organisations to improve their operational transactions, minimise costs, and reduce time in business processes (Teittinen et al., 2013).

Nevertheless, the implementation of an ERP system requires significant planning, effort, and time. Organisations must ensure that their current business process suits the system requirement to maximise its benefits (Davenport, 1998; Grabski et al., 2011). Many have examined whether the ERP system has been successfully implemented and its benefits are maximized by its users. Unfortunately, studies have reported that ERP implementation does not translate to successful improvements in productivity and competencies of a company. Trunick (1999) pointed out that only 40% of all ERP installations achieve partial implementation and nearly 20% are scrapped as a total failure. Thomas (2002) also reveals that the ERP implementation failure rate has increased from 40% to 60%. The complexity of the ERP system has made the implementation process very challenging (Davenport, 1998; Davison, 2002). The implementation of ERP implementations can be unsuccessful if the system is not properly planned and implemented (Helo et al., 2008).

To date, there is little evidence available to highlight ERP success stories in the developing countries context (Al-Mashari and Ghani, 2006). Even fewer studies were conducted in Malaysia that demonstrates the benefits of the ERP system for Malaysian manufacturing companies (Suhaimi et al., 2016). There is minimal evidence that presents the benefit that developing countries such as Malaysia can gain and if the benefits are similar to other Western countries. This situation needs to be rectified as the ERP system implementation in developing countries is arguably challenging as compared to developed countries (Huang and Palvia, 2001)

The objectives of this study are (i) to explore the challenges in the ERP system implementation in a Malaysian organisation and (ii) to discover the benefits of ERP system implementation in a Malaysian organisation. The current study provides an ERP system implementation reference to practitioners. This study can assist companies in Malaysia to anticipate the challenges they will experience in the implementation of ERP system in their business and expect the benefits of adopting an ERP system.

Literature review

About ERP system

The ERP system is an information system that combines various business processes. An ERP consists of multi-module application software packages that support multiple business processes functions. ERP typically includes accounting, manufacturing, finance, purchasing, inventory management, inbound and outbound logistics. (Davenport, 1998; Davison, 2002)

ERP system can also be defined as an integrated software which contains different elements or measures in various domains of firms such as production, human resources management, project management, supply and sale chain management, financial management, and others (Shokri et al., 2012). The structure of an ERP system provides integration and comprehension of information at the organisational level and assure a fluid flow of information is established among various sectors of the firm (Shokri et al., 2012).

In history, the ERP system has initially evolved from inventory management systems in the 1960s. In the 1970s, the Material Requirement Planning (MRP) was introduced to improve the current inventory management system. Next, in the 1980s, Manufacturing Resource Planning (MRPII) was designed and introduced to the industry to add more functions and benefits to the manufacturers. Later, as an attempt to maximise and expand the functions of MRPII system, the Enterprise Resource Planning (ERP) system was invented in the late 1990s (Huang et al., 2003)

ERP system Challenges

In the literature, several challenges currently exist in the integration of the ERP system. The complexity of ERP makes it challenging for organisations to implement. Thus, the ERP implementation has received increasing scholarly attention in recent years (Davenport, 1998). Errors often occur during the implementations which cause delays in the estimated schedule and higher costs (Helo et al., 2008). Furthermore, research has mentioned that ERP implementation can be unsuccessful. This can be attributed to the multiplicity of ERP system of huge changes in the organisation (Maditinos et al. 2012). The cost and complexity of the ERP system were identified as the main challenges in the implementation of the system and followed by the user acceptance level to change.

The huge cost of ERP implementation

Soja (2006) and Helo et al., (2008) pointed out that the cost incurred in ERP system implementation is one of the challenges that businesses experience. Also, there are some hidden costs that companies may underestimate. Besides that, Yusuf et al. (2004) stated that an ERP system has hidden costs during the implementation process such as training costs and consultancy costs. As a result, a shortage of budget will contribute to a lack of training and consultation to guide ERP users.

The complexity of ERP implementation

The complexity of the ERP system implementation has contributed to the number of the ERP industry that has not performed well in their business processes (Umble et al., 2003; Soh and Sia, 2007). Several ERP implementations are taking a long time, while the costs are higher than expected (Ehie and Matsen, 2005). Davenport (1998) and Grabski et al., (2011) state that an ERP system is a complex network composed of various business processes. The mismatch between ERP and organisation is noted to have a significant impact on organisational adoption which could be the main reason that causes ERP implementation failure (Umble et al., 2003). Hence, the users are unfamiliar with the ERP system and are unable to use the system effectively.

Resistance to Change

McAdam and Galloway (2005) observed that the lack of management change is one of the challenges in ERP system implementation. Employees fear that the new system will make their job more difficult. Many organisations that implement ERP solutions face difficulty because the organisation is not ready for the new ERP system and various departments in the organisation demonstrate resistance that conflicts with each other. Moreover, employees are more comfortable with the old system and may not comprehend the need for a new system (Muscatello et al., 2003; Umble et al., 2003)

ERP System Benefits

Timely information

A benefit of the ERP system is that all the related data are stored and saved during current transactions which are stored in a single database and is updated from time to time (Nah and Delgado, 2006). The ERP system enables the data stored in the database to provide a reference to the planning process which the organisation can rely on the information without hesitation, automatically revealing the operating conditions of an organisation. A fundamental benefit of ERP system is data integration through a centralised data repository for the entire firm which, in turn, allow each use direct access to any available system information (Soja, 2006; Nah and Delgado, 2006). Overall, evaluation and proper monitoring of the ERP system implementation can help an organisation to better adapt to the changing programme. Therefore, the organisation can acquire maximum benefits from investing in an ERP system.

Higher accessibility of information

No doubt, the ERP implementation is beneficial for its users. The most significant benefits are enhanced resource allocations and system-broad standardisations in terms of better information access for planning and managing the business activities, enriched business services, reduce business risks, and higher income, and also reduced expenses (Nah and Delgado, 2006: Kongetsidis et al., 2008). The ERP system also provides data transparency. Besides that, the ERP system can reduce the complexity of the business processes and manual interfaces between different systems with standardised and cross-functional transaction automation. Furthermore, order cycle times can be shortened which improves the delivery process and customer interaction (Mustacello, et al., 2003; Helo, et al., 2008).

Improvement in business process

Many companies began installing the ERP system to improve communication with their customers and suppliers (Kongetsidis et al., 2008). From a business standpoint, the benefits of the ERP system can help organisations to reduce time and cost in their business processes, quickens transaction processing, improves operational performance, financial management, and customer service (Helo, et al., 2008). The implementation of the ERP system can assist in minimising errors and data redundancy.

ERP system in Developing Countries Context

ERP system adoption in the well-developed countries context has been rather predominant for many years. Nevertheless, recently, the literature indicates that numbers of ERP system users in developing countries have increased. A study by Huang and Plavia (2001) review ERP implementation differences in developed and developing countries. Their study states that economic status, government regulations, low IT maturity, firm size and lack of business process re-engineering experience as the main hindrance for firms in the developing to fully utilise the benefits of ERP system.

Past literature states that implementing an ERP system in developing context can be quite challenging as compared to developed countries (Soh et al., 2000). Some studies found that the ERP system is not a universal information system and is not suitable for companies in the developing countries context (Rajapakse and Seddon, 2005). In the context of Asian countries, implementing an ERP system can creates lots of cultural misfit issues (Soh et al., 2000; Supramaniam and Kuppusamy, 2010).

Methodology

A qualitative research approach was in this study and the interview was used as the research instrument. Several interviews were

conducted with the IT manager, accountant, operational manager, production manager, and four ERP key users from different departments which are implementing different ERP modules (e.g., inventory, finance, HR, procurement, and production unit). The participants were chosen as all of them are involved and affected by the ERP system. This criterion was included to ensure that the information gathered is accurate and relevant. Altogether, eight participants are involved in this study which included four managers and four ERP key users. Manufacturing firm was selected as the case study because ERP system is known as a system that suits more to the manufacturer and it was mainly developed to cater the need of this industry (Huang et al., (2003).

Most of the interview sessions were recorded using a voice recorder and later transcribed for further analysis. If permission to record the interview was not granted, intensive note-taking was done during the interview. Thematic analysis was used to analyse the data.

Results

This section discusses the findings of the interviews. The section starts with a discussion on the ERP system challenges and is followed by an explanation of the benefits gained by the company from ERP system implementation.

Challenges of ERP system

Cost constraint

The cost of implementing the ERP system is very costly as the system requires a good networking system, reporting system, and IT system. The ERP system also required consultant fees from the consultant to determine what fits the organisation best. There are other expenses too. Participant 2 explained that

> *"The cost for implement new software is huge. There are arguments whether our company decided to implement or maintain the old system" (Manager, 42 years old)*

The cost of ERP implementation is expensive and requires thorough planning. It takes time and the process must be planned well to make sure the implementation can benefit the organisation. However, with government support, the organisation successfully implement the new software for the business operation.

Insufficient training

The users were not familiar with the new software at the early stage of the implementation. Although training has been provided, the users were still unsure of how to use the software. As a result, the data were entered incorrectly. Thus, the headquarter was unable to check the availability of the stock and proceed with the trace process. One of the reasons the key users are not familiar with the ERP system is due to the insufficient training process.

Sufficient training is considered as an essential factor that ensures the success of ERP implementation. Users should be comfortable in using the new system or will result in work redundancy and functional inefficiencies. The training process must involve all the users for them to understand how the system operates thoroughly. Participant 6 clarified that:

> *"The training process and period were insufficient which only conducted for two weeks of training only. Key users are lack of understanding of the new software and should be provided with continuous training and assessment" (Key users, 25 years old)*

Several managers disagreed with the training process as it was only conducted for a short period. With the introduction of the ERP system, they think that sufficient training is important as it can help users to have a greater understanding of the ERP system and to utilise it fully. Participant 8 also pointed out that:

> *"Training is a common process in any installation of a new information system. Sufficient training within the company can guide the key users including me to have more understanding of the ERP system" (Key user, 29 years old)*

Since the system is much more complex, hence, training is vital to ensure all the key users thoroughly understand the system. Lack of training leads to ERP users' unfamiliarity with the new software. The implementation of the new ERP system can lead to confusion for the users. Users were frustrated in the workplace and resulted in a delay in operations and ineffective decision-making process. Participant 1 stated that:

> *"Many of our users including myself found that the software was so hard to use, especially at the initial phase of implementation. We were unable to operate this software effectively and fully use it" (Manager, 48 years old)*

Poor Internet line and IT infrastructure

The final challenge is the line connection problem which occurs in the organisation. Whenever a new ERP system is implemented, a good network condition is required to ensure the system runs smoothly. Participant 5 explained that:

> *"Sometimes the data key-in process was slow. I feel frustrated that the work cannot be done in time. I think the company should try to get a faster internet line" (Key user, 27 years old)*

The software system may experience temporary breakdown due to heavy traffic from users. This phenomenon happens when many users from different branches input the data at the same time. As a result, the works cannot be done in time. This statement has been supported by Participant 8 who stated that:

> *"I have lots of data to key-in. I am afraid that sometime, because of the line problem, my data key in the process cannot be done in time. It makes my job getting loaded from day to day" (Key user, 29 years old)*

Benefits of the ERP System

After the challenges of the ERP system were identified, the managers and the users of the organisation have pointed out several benefits after they implemented the system which supports their daily operations.

Improvement in stock management system

The availability of consistent data improves the speed and quality of the decision-making process. In terms of inventory management, an organisation can manage stock levels efficiently in line with the schedules. The ERP system has to provide sales and operations planning with access to critical information processes to ensure the business does not overpromise and underdeliver to customers. Thus, the organisation can make effective decisions on resource allocation and respond quickly to changing business opportunities. Participant 2 explained that:

> *"With this new system and software, stocks positions and purchasing figures enable us to do the future planning, especially for the export activities. This software has greatly improved the stock planning processes. I really like it." (Manager, 42 years old)*

Organisations can track inventory levels daily, including inventory in transit and future consignments to be received. A quick decision can be made which enables the organisation to pursue the most strategic decision in their business.

Improvement in data communication process

Another benefit of the ERP system is that it improved the data communication where the data are created and available online throughout the system. Participant 4 discussed:

> *"With the new software, it has to allow various departments to access information easily and lowering the cost of doing business overall. Also helps to eliminate redundant processes and system" (Manager, 38 years old)*

At the same time, it provides visibility to everyone to access the linked data and the ability to track the inventories quickly. The ERP system significantly increases information accuracy and its availability which ensure the timeliness of the information.

Improvement in data collection process

The ERP system has also improved the data collection feature. All data are collected only once during the initial transaction, stored centrally, and updated from time to time. This ensures that the planning phase can rely on the data which realistically reflect the current operating conditions of the organisation. Participant 6 pointed out that:

> *"Before the ERP system was introduced, we use manual record keeping and ordinary software such as Microsoft Excel for the data collection. After the ERP system has been implemented, stocks and quantities of products can be verified immediately. The data collection process becomes so easy" (Key user, 25 years old)*

This leads to an improvement in data quality, data transparency, system-wide consolidation and overall organisational efficiency. The data can be processed in real-time and without data redundancy.

Improvement in data quality and decision-making process

The ERP system has improved the quality of data compared to the manual record which was previously used. As a result, they can make fast and accurate decisions. Besides that, higher accuracy in inventory counts has resulted in lower carrying costs, fewer stock outs, and cost reductions from tracking down inventory errors. Participant 1 mentioned that:

> *"As compared to the old system, the new ERP system has fastened the decision-making process. We can perform our job faster than before. The best part is that I know that I have many data captured in this new system. So, much I can make faster and quite confident with my decision" (Manager, 48 years old)*

Participant 3 also supported this statement by stating that:

> *"ERP system integrates the data from every segment of the business, making it available on a real-time basis. Thus, we can make faster and accurate decision for our business processes" (Manager, 35 years old)*

Improvement in report quality and preparation process

The ERP system has enabled reports to be generated accurately based on the data. The time required to generate the reports has reduced and quickened the preparation of reports. Participant 1 explained that:

> *"The ERP system has enabled us to review the report and provide better visibility in term of our production reporting. My production report looks good. Yes, I definitely prefer this new integrated system" (Manager, 48 years old)*

The system clearly presents the financial status of the company, especially the integration of data which ensures greater visibility in all areas of the business, from daily operations to the strategic decision level. Besides that, the software enables the consolidation of separate independent century financial databases to provide consolidated reporting. This software assists in the integration of activities from the branch offices' general ledgers. Thus, once the activities from the branches are captured, it can then be used for the consolidated report. Participant 7 also highlighted that :

> *"The software has provided us with accountability and accessibility in the trading transaction at all time and reduction of the data processing time. Previously, quite hard to gather data needed on time" (Key user, 33 years old)*

The ERP system enables all data to be available for different departments in an organisation, eliminating the need to re-enter data and reducing the risk of error. The system has improved the efficiency of the inventory management process. The number of stocks can be determined accurately, and the work procedures were minimised.

Discussion

Consistent with the previous study, it is found that issue related to cost is still become the main challenge experienced by the manufacturing firm in Malaysia. Huang and Palvia (2001) state that due to the small business size of companies in a developing country context, limited allocation of cost to implement the ERP system can be one of the critical issues. Next, insufficient training is also found as one of the main issues faced by the ERP system implementer in Malaysia. This is due to the cost incurred for the training. These training and cost issues are interrelated. If the company cannot bear the cost of ERP, the training process will be automatically less. Consequently, ERP users' unfamiliarity with the new ERP system contributes to the slow key-in process was one of the challenges faced by the organisation in Malaysia. Again, this result is consistent with the other studies such as Huang and Palvia (2001), Rajapakse and Seddon (2005) and Soja (2006). Even though the ERP system has been introduced, implemented and used by many companies in Malaysia in more than a decade ago, cost remains the main issue.

On the other hand, the ERP system implementation has brought many benefits and advantages to the company. The benefits of the ERP system include significant improvement in the stock management system, faster data collection process and better data communication among managers. In addition to that, ERP system also improves quality of data and decision-making process The results are consistent with the studies done by Supramaniam and Kuppusamy (2010), Suhaimi, et al., (2016). Despite the challenges, the implementation of an ERP system has provided better visibility in terms of production reporting.

Conclusion

The ERP system has been widely used for a considerable number of years in developed countries. The system is capable of enhancing organisations' business operation efficiency. In Malaysia, the implementation of the ERP system experiences several challenges. The main challenge is related to the cost of the system that an organisation must bear whether the cost required is within its budget. Due to this cost constraint, issues related to insufficient training and unfamiliarity of users are also matters that need more attention.

Due to the limitations of time, the study only focuses on one case study, i.e. a manufacturing firm. Thus, the results of this study might not be regarded as a general outcome. There are several suggestions for the companies who wish to implement the ERP system in future. First, it is suggested that companies should consider training as an essential element to ensure the success of the ERP system implementation. Even though the training cost might be expensive, the company should not underestimate the importance of ERP user's training. The allocation for the cost of training should be one of the most important aspects of ERP planning. Moreover, the company should be able to identify the role of the key users and provide guidelines for them to thoroughly understand the ERP system. Also, the company should ensure the IT facilities and infrastructure are ready and stable before implementing the ERP system. This is to make sure that the company can enjoy the full benefits of implementing the ERP system.

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