

A STUDY OF ERP ADAPTATION IN  
MALAYSIAN AGRICULTURAL SME

AIDA SHEIKHI

UNIVERSITI KEBANGSAAN MALAYSIA

A STUDY OF ERP ADAPTATION IN MALAYSIAN AGRICULTURAL SME

AIDA SHEIKHI

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**KAJIAN PENGAPATASIAN ERP DI PKS SEKTOR PERTANIAN DI MALAYSIA**

**AIDA SHEIKHI**

**DISERTASI YANG DIKEMUKAKAN UNTUK MEMENUHI SEBAHAGIAN  
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**2019**

## **DECLARATION**

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

13 February 2019

AIDA SHEIKHI  
P68471

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## ABSTRACT

Small and Medium-sized Enterprises (SMEs) are rapidly growing and their survival strategy is to be innovative, flexible and efficient to outsource simple tasks and concentrate on the complex activities. The government of Malaysia introduced Small and Medium Industries Development Corporation (SMIDEC) to assist SMEs in development and enhancement of their services by providing training and supports. There are few types of ERP available for companies, in-house which is designed for the business or off-the-shelf that companies obtain the license and use and on cloud which is eventually off the shelf but with more personalization. Each has its advantages and disadvantages. Unfortunately, Agriculture sector was an overlooked industry by business IT service provider companies and many features were not compatible with their standard operating procedure (SOP) which made the consideration of ERP even riskier. This research aimed to discover the critical success factors in ERP adoption of SMEs in Malaysia using mix models. Firstly, a list of questions was sent to the employees of Agro companies on their existing systems/ERP. These questions are commonly asked in initial stage or system evaluation for ERPs. Results were gathered and translated to rating tables, questions and shared with three experts who are top level managers of 3 top agro companies in Malaysia which practice different types of ERP systems introduced above. The ratings and comments were then established and followed by suggestions to present to them in second round of interview in order to discuss and evaluate them. According to expert's review, seven practice could minimize the risk in ERP adaptation.

## ABSTRAK

Perusahaan Kecil dan Sederhana (PKS) berkembang dengan pesat dan mereka perlu inovatif, fleksibel dan cekap untuk melakukan tugas luar dengan mudah. Sementara itu, menumpukan perhatian kepada aktiviti kompleks. Kerajaan Malaysia memperkenalkan Perbadanan Pembangunan Industri Kecil dan Sederhana (SMIDEC) untuk membantu PKS dalam pembangunan dan peningkatan perkhidmatan mereka dengan menyediakan latihan dan sokongan. Terdapat beberapa jenis ERP yang tersedia untuk syarikat-syarikat, di dalam rumah yang direka untuk perniagaan atau di luar kedai yang syarikat mendapatkan lesen dan penggunaan dan di awan yang akhirnya di luar rak tetapi dengan lebih peribadi. Setiap mempunyai kelebihan dan kekurangannya. Malangnya sektor pertanian adalah industri yang dilupakan oleh syarikat penyedia perkhidmatan IT perniagaan dan banyak ciri yang tidak sesuai dengan prosedur operasi standard (SOP) mereka yang menjadikan pertimbangan ERP lebih berisiko. Kajian ini bertujuan untuk menemui faktor kejayaan kritikal dalam pengangkatan ERP di Malaysia menggunakan model campuran. Pertama, senarai pertanyaan telah dihantar kepada kakitangan syarikat-syarikat Agro mengenai sistem / ERP sedia ada mereka. Soalan-soalan ini sering ditanya di peringkat awal atau penilaian sistem untuk ERP. Kajian ini bertujuan untuk menemui faktor kejayaan kritikal dalam penggunaan ERP PKS di Malaysia menggunakan model campuran. Pertama, senarai pertanyaan telah dihantar kepada kakitangan syarikat-syarikat Agro mengenai sistem / ERP sedia ada mereka. Soalan-soalan ini sering ditanya di peringkat awal atau penilaian sistem untuk ERP. Hasilnya telah dikumpulkan dan diterjemahkan kepada jadual penarafan, soalan dan dikongsi bersama dengan tiga pakar yang merupakan pengurus peringkat atas 3 syarikat agro teratas di Malaysia. Yang mengamalkan pelbagai jenis sistem ERP yang diperkenalkan di atas. Penarafan dan komen kemudiannya ditubuhkan dan diikuti dengan cadangan untuk menyampaikan kepada mereka dalam pusingan kedua temubual untuk membincangkan dan menilainya. Menurut kajian pakar, tujuh amalan boleh meminimumkan risiko dalam penyesuaian ERP.

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## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 BACKGROUND**

Over the past decade, Enterprise Resource Planning (ERP) systems have been among the most significant improvements in corporate information systems (Davenport, 1998; Hitt et al. 2002; Upton and McAfee 2000) and in Information Infrastructure (II) (Hanseth and Braa 2001). The primary objective of ERP systems can be presented as the profits combined with the implementation and utilization of ERP systems (Robey et al., 2002). The benefits are compared only in part to the technology, majorly stemming from organisational transformations; namely new business processes, organisational structure, work procedures, the combination of executive and effective activities, on a global-scale evaluation of work practices leading to organisational growth, which the technology assists (Hedman and Borell, 2003).

The implementation of ERP systems has been considered as a difficult and high-end organizational experiment (Robey et al., 2002). Davenport (1998) has described the implementation of ERP systems as “maybe the world’s largest experiment in business change” and for most organizations “the largest change project in cost and time that they have offered in their history”. To give a notable example of the expenses and time frames related to implementing an ERP system one might refer to the case of Nestlé. By the end of 2003, the company had spent US\$ 500 million in an ERP system. The American subsidiary began the project in 1997. In the year 2000, the global parent decided to continue the project into a global solution (Worthen, 2002).

One of the targets many companies had strived to achieve was a homogenous and regulated corporate information system and II. Looking at the results, it can be inferred that the predicted design was never successful. Complex II has been developed as a result of pressure and changes in, to the organization, external and internal context (Hanseth and Braa, 2001). However, the fundamental issues which were rooted originally rooted in approaching consolidated large-scale systems remained unsolved. Managers were still striving for organizational accountability. Customers were still pursuing one global partner.

Process inconsistencies were lurking across the enterprise. Although, having befitting coordination, production and logistics might have been organized.

Consequently, the central concern of many companies turned into finding new methods to rearrange coordination and cooperation among business units, clients, and suppliers. The advantage of integrating the extended value chain has been evident in various industries.

Integrating business processes has enabled organizations to provide both consumers and/or suppliers with better merit in terms of products, services and information. As a result, the quality of the entire value chain has been increased. Forward and backward integration has led to higher efficiency and effectiveness in fields such as scheduling, transactions, and planning (Lubatkin, 1988). Still, the statistics reveal that in many cases even well operated contemporary companies are not entirely involved with their descendants and antecedents in the value chain.

Without information and communication technology, managing an effective supply chain is impossible (ICT) (Gunasekaran and Ngai, 2004). The actual effective factors on the profit of a company rely massively on the ability to properly integrate information systems (IS) (Henningsson, 2007). Since the development of II; that are essential for geographically spread value chains is attainable now, during past decades, the advances in ICT; namely ERP systems, has set the ground for global integration initiatives.

ICT is considered to be the foundation of create the combined extended value chain (Gunasekaran and Ngai, 2004). In this sense, ERP systems implementation and IS integration redirect strategic decisions related to integration in the extended value chain. Accordingly, integration initiatives reflect the engagement with respective involved parties.

There are numerous literatures focused on ERP systems, intra-organisational value chains, internal coordination and how to implement them effectively. However, what is lacking is information about the extended value chain with concentration on the entire chain from incipient producers to end consumers (Browne et al., 1995; Jagdev and Browne, 1998) or the role of ERP systems in relation to enhanced services.

As various corporations often operate autonomously, methodologies such as Business Process Re-engineering would not be applicable to external business process since there would not be moderator to organize a top- down approach.

## **1.2 PROBLEM STATEMENT**

ERP system works as an assuring strategy that enables companies in general. It particularly helps SMEs to improve their activities within their internal sectors resulting in better outcomes. Investigations conducted on Malaysian SMEs presents two forms of ERP systems implementation, the off-the-shelf and In-house ERP systems (Poba-Nzaou et al. 2008; Noudoostbeni et al. 2009).

Probing through the Malaysian SMEs in terms of ERP practice shows a low rate of ERP acceptance (Kotelnikov 2007). The researchers conducted on SMEs without the proper ICT reveals that despite the various issues the resistance against ERP implementation still exists. This in turn will result in poor adaptation. On the other hand, SMEs who have designed their ERP system In-house struggle with the high expenses of the system development due to the efforts required to customize and align system functions with their standard operation process (SOP).

However, it is noteworthy to state two prominent thoughts; required investment on the

implementation of an ERP system and its influence on the business process. With regard to the former point, it is of great importance to note that companies implementing ERP system encounter problems associated to start-up matters which consequently bring about a performance dip instantly after the implementation in the short term (McAfee, 2002). As for the latter remark, an ERP implementation has an eminent effect on the business process. Provided that the implementation of ERP is combined with properly managed business processes, the merits of the ERP can be clearly realized. Having said that, these remarks highlight the importance of a meticulous management of the adaptation process in order to maximize the benefits of an ERP system.

The use of new technology, especially when the technology is intended to replace a legacy system is considered a tedious task. Salim, Suleiman, and Salisu (2015)

Although the application of ERP in the agri-food sector has been suggested to be small, ERP system has been found very effective in covering the demands of efficient supply chains which are empowered by stable and logistic business processes and low demand uncertainty. However, even these efficient supply chains are still suffered by problems in achieving the required flexibility when traditional ERP is employed (Akkermans et al., 2003, Koch, 2007, Rettig, 2007). So, a continuous and detailed procedure of capturing, editing and communicating of information is required to ensure the effectiveness of business processes.

### **1.3 OBJECTIVE**

The objectives of this research are:

1. Identify the contributing factors to ERP adaptation failure in SMEs of Malaysia based on case studies in Agriculture sector.
2. Provide suggestions based on literature to overcome failure factors based on expert's validation.



## **1.4 RESEARCH SCOPE**

This research shows the rank of implementation of a successful ERP system which assists companies with directing and coordinating all the business functions within their borders. This research aims at the agriculture small and medium-sized enterprises (SMEs) whose headcount or turnover falls below certain limits. According to the Small and Medium Industries Development Corporation (SMIDEC) in Malaysia; in relation to services and different sectors, the definition of SMEs is the firms with sale turnovers limited to RM 20 million or lower or with the number of maximum 75 full time employees. In case of those agriculture SMEs which entail manufacturing sections, the sales turnover does not exceed RM50 million or the number of full-time employees does not exceed 200.

Agriculture SMEs area in Malaysia has been picked to be the targeted activities of this research due the need of this area to combine their resources and stay aggressive and customer oriented in the era of globalization.

## **1.5 PHASES OF THE RESEARCH**

The methodology of this investigation is a combined mode of survey, case study and experts review. It has 4 basic phases:

### **1.5.1 Phase I: Preliminary Analysis**

There will be a conduction of literature to prepare a comprehensive idea about the agriculture industry and its modern management followed by some preliminary research within the industry itself in Malaysia through platforms and forums they speak about industry trends or their needs, the relevant issues then were analyzed and a short survey was passed to them to state more details on their needs of ICT and management. The result of this survey defined the problem statement and the objective of this research was conveyed and some research methods were chosen and agreed

Similar articles, journals, books, news and other resources that have been published by a relevant professional in discussed to explain the facts. All the resources are reliable and properly cited.

### **1.5.2 Phase 2- Data Collection**

Both case study and experts review process are used to manage the data collection. Quantitative data is collected through a case study and a survey which is a list of preliminary common questions ERP vendors use to collect data by users and know their expectations from the system and based on the answers the designed system will be introduced. In this research, those questions are asked after the implementation of their system regardless of the type to find out if their needs have been really taken care of and system met the concerns, The questionnaire is consisting of pre-determined close-ended (mostly) questions with multiple choices, therefore it is considered as a quantitative-based method as well as qualitative. Respondents were also provided to answer the question in n open answer in case pre-determined option wouldn't fulfill their preferred answer.

### **1.5.3 Phase 3- Data Analysis**

The collected data would be analyzed to evaluate the questionnaire's results for better analytics and generate an outcome for the topic. Further, it would be in the form of statistical data and descriptive method.

Based on the outcome of data analyzing and statics, the failure or success factors gained from result will be discussed with experts of the industry with successful rate of ERP adaptation to evaluate the suggestion and recommendations proposed.

### **1.5.4 Phase 4- Conclusion**

Ultimate result of data analysis and interviews are summarized as key factors to failure a system and also needs of this industry to the system's modification for a

better result to make proper conclusion and lower chance of failure risk which will tie the research with its objectives.

## **1.6 SUMMARY OF THE CHAPTER**

This chapter mainly discusses about the main concern of the study – A study of success and failure in ERP implementation and its discussion on importance of those factors with experts who received a good experience through these systems in agriculture industry of Malaysia. There are two objectives to be achieved at the end of the research and provide an overview of the dissertation

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This section of the research will contribute some insight associated with the research topic and subsequently identify the study area of ERP implementation System in agriculture SMEs through literature review.

The chapter is concluded by identifying the importance of implementation System in agriculture SMEs in different countries to explore its performance if applied in similar enterprises in Malaysia. Primarily, the literature explores the comparability and relativity of experiments with ERP in all sectors; gradually laying it down to its position in Malaysia enterprises. Furthermore, the application of ERP in agriculture field SMEs has been investigated. The result of ERP application in Malaysian Agro-based businesses and ERP enhancement methodologies have been discussed in details.

Today's operational processes and supply chains are far more complex than a decade ago. They include complex business functions involving different departments, with a need for the most up-to-date information, and critical linkage with upstream and downstream partners to name a few. Enterprise resource planning (ERP) systems have proved to be the solution to the data needs of many businesses, but a costly mistake for many others. Davenport (1999) reports ERP adaptation comes with long timelines, challenge, high cost, and also it could place huge pressure on business timeline and resources.

According to research, approximately 66-70 percent of ERP implementation projects have been found to be unsuccessful in obtaining their main implementation aims (Shores, 2005; Lewis, 2001; Carlo, 2002; Ward et al., 2005; Zabjeck et al., 2009; Carlo, 2002). It is also represented in literature that ERP implementation failure is frequent even in projects with the most proper circumstances (Liao et al., 2007).

The ERP literature on implementation is extensive (Esteves, 2009; Møller et al., 2004). It covers areas such as risk management using ERP systems (Koh et al., 2006), specific methods of ERP requirements analysis (Vilpola and Kouri, 2005; Vilpola et al., 2007), relevance of local or cultural aspects to consider during implementation (Liang and Xue, 2005; Yousef et al., 2006), pre-implementation issues (Brem et al., 2008), and critical success factors (Akkermans and Helden, 2002; Huang et al., 2005; Hong and Kim, 2002). Whilst the existing literature is voluminous and complex, it nevertheless highlights a glaring need for greater understanding of ERP implementation failures, and need for a single literature source, which practitioners and researchers alike can use as a reference point for better understanding of the nature and possible causes of implementation failures, and how they may go about limiting these in order to increase the chances of future successful implementations.

Initially ERP was developed only to manage and predict material requirements, and despite the difficulties and high costs of implementation, ERP systems have matured into a comprehensive advanced technology software, capable of taking on complex tasks and organizational activities, providing them with a unique integration characteristic. ERP systems are being implemented extensively, with all major fortune 500 companies in all fields adopting a practice (Panorama Consulting Group, 2010).

ERP models mainly consist of 4 components that are implemented through a methodology. A simple visual of the integration between the components are featured below. (Marnewick, 2005)

ERP systems are usually engaged to address problems of organizational failure in ICT coordination caused by the application of legacy systems (Nah et al., 2003). Legacy systems generally function to offer to develop long- process solutions that are challenging to maintain. Besides, they longer meet organizational needs after a period of time (Bradley, 2008). The literature claims that combining some proven SOPs with success records from different industries which hold similar process flow in main departments such as HR or Finance with data flow across different departments of an organization could be the base of a new ERP system with enhanced relationship and coordination among the collected information. Rightly chosen ERP systems are offering benefits such process as cost and time reduction, speedy process transaction, enhancement of operation performance, finance control management, better web interfaces, customer service and most of all, clear and effective communication among all of above (Kogetsidis et al., 2008).

## **2.2 ENTERPRISE RESOURCE PLANNING (ERP)**

Enterprise Resource Planning or (ERP) Systems is the name to packaged software applications originally targeted at manufacturing companies. (Maheshwari, 2001). At first, it came to market as Manufacturing Resource Planning systems or (MRP II) by the Gartner Group in the early 1990's (Keller; 1999; Dahlen and Elfsson, 1999). Then it was extended to other functions such as human resource and finance. The term was well received by business software vendors. Since, this concept of MRP II was introduced and adopted by other sectors and changed to ERP or Enterprise Resource Planning. ERP systems are now configured for organizations in many different sectors such as services and government, Today, ERP systems are known as one stop integrated knowledge system that could be used within any business enterprise (Koach et al., 1999)

- Organizations compose ERP systems in three remarkable ways: (Dahlan and Elfson, 1999). Integrated Standard Application Packages
- Integrating Systems In-house
- Joint Venture Systems

Standard Application Packages points to combined group of applications created by solution providers to satisfy industry wide business requirements overall. There are also best of breed functional systems which are designed to feed the middle ware of services, there are called off-the-shelf systems as well. Standard Applications packages managed to meet the requirements of many cases from different industries and in many other cases, combination of standard application packages and off-the-shelf or best of breed functional applications make a successful result and those systems are known as Joint Venture Systems by Dalhan and elfson (1999)

To talk about goods of ERP systems, the availability of information to all organization's functional areas in real-time and also the data standardization through the entire enterprises would be the highlight of all. "Best practices" covered in the organization, the capability and power to force an enterprise to move towards market trends and analysis and detailing that can be employed for long-term outlining. Nowadays, there are many ERP service providers and designers but on top of all, 5 are well known as listed; SAP AG, Oracle Corporation, People soft Inc., JD Edwards and Company and Baan International. All these five ERP vendors conquer 64 percent of total ERP market. The advantages of ERP were integrated functionality, consistent user interface, integrated database and unified architecture and provide tools for the inquiries.

As a result of a massive range of ERP design, it is not easy to have a clear definition. Although, the briefest description has been given by Nah et al. (2001), introducing ERP systems as:

“A packaged business software system that enables a company to manage the practical, dynamic and effective use of resources (materials, human resources, finance, etc.) by providing a total, integrated solution for the organization's information-processing needs”.

Kumar & van Hillegersberg (2000), have a broader definition of ERP system:

“A configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization, the current generation of ERP systems also provides reference models or process templates that claim to embody the current best business practices”.

Al-Mashari et al. (2003) have illustrated the fundamental structure of an ERP system as a database, application and a consolidated network for the entire business. Many academics have explored the definition of ERP. Bingi et al. (1999) have considered ERP system as not a sole software system. Rather, it has a huge impact on business processes and developing “organization revolution”. It is not merely a technological practice.

According to Davenport (1998), ERP systems commonly incorporate with different software modules, which allow businesses to automate and integrate the preponderance of business purposes by using or sharing the common information, practices, updates, data and records among all in real-time. The author further explains the structure of ERP systems being:

“The heart of an [ERP] system is a central database that draws data from, and feed data into a series of applications supporting diverse company functions. Using a single database dramatically streamlines the “flow of information throughout a business”.

The key feature of an ERP system is the collaboration of various organizational functions in order for it to require the information only to be entered once. Consequently, the data would be available across the organization with real-time updates (Davenport, 1998). At the operational level, Gable (1998) illustrates ERP as a “comprehensive packaged software solution, which seeks to integrate the complete range of business processes and functions in order to present a holistic view of the business from a single information and IT architecture”.



Similarly, Nah et al. (2001) and Stemberger and Kovacic (2008) have described ERP system as a “packaged business software system that enables companies to effectively and efficiently manage resources (material, human resources, finance, etc.) by providing a total integrated solution for an organization’s information-processing needs”.

Jacobs & Bendoly (2003) illustrated the ERP system in a corporation’s foundation, is similar to the actual highway system. They have similarly advised that IT theories in business such as, B2B (Business to Business), B2C (Business to Consumer), and CRM (Customer Relationship Management) are essentially the elements of an enterprise's core ERP system. There has been evidence that, despite the determination of ERP system, immediately after an enterprise implements an ERP system, the competitiveness and survival of the business becomes vital.

Research reports the implementation of ERP systems to enterprise's business procedures as a process-driven design (Yu, 2005; Van der Aalst and Weijters, 2004), Meanwhile, the implementation of business’s operation processes to ERP practicality and that is sample figure is defined as the technology-driven design for ERP implementation (Chiplunkar et al., 2003; McAdam and Galloway, 2005; Markus, 2004).

Furthermore, literature suggests that the impression which both business SOP modification to the implemented system's functionality and reference model proposed to the organization as future model bring can equally be beneficial to hybrid strategies (Scheer and Habermann, 2000; Soffer et al., 2005; Arif et al., 2005; Gao et al., 2007). The experiment should be backed up by the use of new tools to match the ERP program and the organization's requirements (Helo et al., 2008).

### **2.3 BUSINESS PROCESS MODELING AND ERP REQUIREMENTS**

Several strategies can be applied to illustrate business procedures. For example, Aguilar-Savén (2004) developed an experiment on the concept of business procedure modeling strategies and tools and provided a brief summary of modeling methods

used the most constantly. These approaches include flowcharts, data flow diagram (DFD), role interaction diagram (RID), Gantt chart, role activity diagram (RAD), colored Petri-net, object-oriented (OO) methods, IDEF family of methods including Unified Modeling Language (UML), workflow procedures, GRAI-nets and GRAI-grids. Lately, a published literature review on SOP modeling by (Alotaibi, 2014) classifies few spread models which are wider range covering. For example, Business Process Model and Notation (BPMN), Event-driven Process Chain (EPC), Business Process Execution Language (BPEL), Role Based Access Control (RBAC) models. Also, Panayiotou et al. (2013) investigate the arrangements of IDEF (IDEF-0, IDEF-1 and IDEF-3), process charts, BPMN, GRAI Grids and GRAI Nets, UML, Entity Relationship Diagrams (ERD), DFDs as well as several ARIS architecture methods (ex: Function Trees, Function Allocation Diagrams (FADs) Event-Driven Process Chains (EPCs), and Process Chain Diagrams (PCDs)).

To a great extent, the modeling techniques originate from a wide range of instructions; namely systems analysis and design, database outline, software engineering and coordination assumption (Luo and Tung, 1999). Therefore, each method applies a distinctive set of concept and business planning model with regard to various outlooks.

A number of ERP systems have planted progress strategies in based on their capabilities and “best practice” solutions (Curran and Ladd, 1999; Post and Van Es, 1996). IFS (Industrial and Financial Systems) are basically ERP vendors that have evolved utilitarian resource models in order to bring upon distinguishable evidence of specific data required by a corporation (Adam et al., 2014), BAAN (Post and Van Es, 1996) Oracle (Oracle, 2006) and SAP (Born, 2012). It is probable for the models added in an ERP system to boost the process of the compatibility of the system within standardized framework.

There are ERP systems that lack an established work frame and there are the ones that implement various modeling protocols, aiming at specific aspects of the enterprise (Soffer et al., 2003). However, even under circumstances where software

packages provide process access (Scheer et al., 2006), these rarely meet the specific enterprise requirements entirely. Instead, they often overlook organizational problems and manual exercises that are segments of the analyzed business procedures which has to be done manually. It is not possible to solely employ the generated primary practical models to accomplish success in developing the essential factors of the business. Many researchers have defined the significance and impact of Business Process Modeling on ERP (van Stijn and Wensley, 2001; Finney and Corbett, 2007; Stemberger et al., 2009; Amid et al., 2012; Ziemia and Oblak, 2013).

As explained earlier in this chapter, BPM is employed in creating the AS-IS and TO-BE models for the distinctive evidence of business requirements and linking business and IT (Stemberger et al., 2009). In their experimental study, using procedure models as one of the CSFs in successful ERP integration, Beheshti et al. (2014) present business procedure and institutionalization. Other factors include: excellent management support, responsibility, efficient project management, customer support and the training of the staff. Jarrar et al. (2000) investigate the impact of business process management (BPM) in relation to ERP implementation projects. The conclusion is “to implement ERP successfully, organizations must treat it like a change management project and focus on an integrated approach of BPM.”

Procedure modeling techniques and means are implemented by scholars in ERP-related publications. Dugerdil and Gaillard (2006) works with UML. On the other hand, Gulla and Brasethvik (2000) and Panayiotou et al. (2004) practice ARIS methods. Although the significance of process modeling in ERP implementation has been emphasized in papers for long, there has not been many recommendation of any particular modeling techniques or tools (e.g. the work of Okrent and Vokurka, 2004).

Procedure modeling approaches are used in the current claims of engineering frameworks and methodologies for ERP development. However, their participation is to some extent underrated or is entirely irrelevant (e.g. in the work of Stemberger and Kovacic, 2008). Soffer et al. (2003) present a custom Object-Process modeling approach and applies it to produce of a comprehensive ERP system model. The

concepts of OO have been also used, in the work of Kosalge and Chatterjee (2011), to suggest and endorse an approach that parallelly simulates the essence of the process steps as well as the human behavioral circumstances. Pajk et al. (2010) has used Business Process Management Notation (BPMN) in order to create a base model which could be employed in Microsoft Dynamics NAV ERP system implementation.

## 2.4 BENEFITS AND CHALLENGES OF ERP SYSTEMS

Even though the advantages resulting from ERP implementation vary from organization to organization, the literature favors on the common benefits all organizations can accomplish by implementing an ERP system (Table 1).

The judgments in Table below for the benefits of ERP systems are significant as, despite high implementation costs, no evidence of determined negative achievement associated with ERP investments is recorded (Hendricks et al., 2007). Notwithstanding the many positive angles of ERP systems, there are disadvantages too. Estimating the moderating impacts of ERP expenditure on organizational performance, Lu and Jinghua (2012) report that corporate governance has a positive moderating impact on the relationship between ERP properties and cost and firm performance. But, they also observe firms with greater levels of diversification effect worst after ERP is implemented in it.

Table 2.1 Researches done on specific benefits of ERP adaptation

Benefits	Authors
Organization learning	Shang and Seddon (2002)
Improve supply chain performance	Shahat and Uddin (2012)
Reduction in production cast	Hawkings et al. (2004), Hasan et al. (2011), Olson et al. (2013)
Reduction in financial cost	
Increased profits	Hendrick et al. (2007), Hunton et al. (2003), Hayes et al. (2001)
Increase in ROA and ROI	
Centralised information	Hasan et al. (2011), Beheshti (2006), Spathis and Constantinides (2003)
Improved information response	
IT system standardisation	Beheshti (2006), Spathis and Constantinides (2003)
Integration improved in business processes	Shang and Seddon (2002)
Enhanced reporting function	Shang and Seddon (2002), Spathis and Constantinides (2003)
Improved financial reporting	
Technology upgrade	Shang and Seddon (2002)
Attain expand and extend Enterprise systems	Olson et al. (2013)
improved planning and control	

ERP implementation is the procedure through which technical, organizational, and financial sources are configured to provide an efficient running system (Fleck, 1994). However imposing ERP systems can be hard, time-consuming, and steeply-priced for organizations (Shehab et al., 2004). Implementation complexities and associated demanding situations are due to the character of ERP systems, which deal with pass-organizational enterprise tactics in a fee web because the essential constructing block of the gadget (Daneva and Wieringa, 2008).

This offers a mutual gadget, which lets the enterprise activities of one organization become a crucial part of the enterprise of its parameters, growing gadget abilities far beyond the sum of the ERP aspect's man or woman capabilities, wherein each capability offered, fits the particular desires of every stakeholder institution.

ERP systems are developed on "pleasant exercise" fashions. As a result, their imposing regularly calls for corporations to restructure their enterprise techniques around the ones practices, which is obvious in recent research. as an example, Maguire et al. (2010) discover the introduction of ERP structures often result in key organizational modifications, which, unless it is managed cautiously, can bring about war within an agency. This warfare is mainly glaring with regards to the query of a way to combine ERP systems, what should take place to the legacy system, and the way in which the employers' approaches need to be modified. This crucial reorganization is frequently considered as root of multiple failures (Soh et al., 2000).

According to Hirt and Swanson (2001), businesses that aim to utilize ERP systems without having a "reorganization approach" may eventually go through technical and supervisory troubles. Additionally, suspensions in undertaking implementation or even complete failure of the implementation are among other possibilities. other elements determined to affect the effectiveness of ERP gadget implementation, consists of external consultant support, knowledge transfer, and the technical components understanding transfers, all of which might be important during an implementation manner.