

Available online at www.sciencedirect.com**ScienceDirect**

Procedia Technology 11 (2013) 220 – 226

Procedia
Technology

The 4th International Conference on Electrical Engineering and Informatics (ICEEI 2013)

The Benefits of Enterprise Resource Planning (ERP) System Implementation in Dry Food Packaging Industry

Samira Sadrzadehrafiei^{a,*}, Abdoulmohammad Gholamzadeh Chofreh^b, Negin Karimi Hosseini^a, Riza Sulaiman^a

^aFaculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, Malaysia

^bFaculty of Mechanical Engineering, Universiti Teknologi Malaysia, 81310, Skudai, Johor, Malaysia

Abstract

The corporate competitive environment is being liberalized and globalized, therefore the organizations, especially dry food packaging industry, need greater interaction between their stakeholders. One of the problems organizations face to is the segregation of the business functions in an organization. Thus, the business experienced to implement ERP systems for solving this problem. In contrast, the ERP projects have not been effective enough and hence have been unable to achieve all the results envisaged. Therefore, an in depth understanding about the benefits of ERP implementation is needed to ensure the successful system implementation. This study seeks to determine and classify the benefits of ERP system implementation in dry food packaging industry. The methodology of this research comprised of three phases: define the benefits of ERP system implementation from the current literatures, categorize them into strategic, tactical and operational benefits in each business functions in an organization. These ERP benefits are summarized in this paper as a research finding to assist the managers in implementing ERP system successfully.

© 2013 The Authors. Published by Elsevier Ltd. Open access under [CC BY-NC-ND license](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Selection and peer-review under responsibility of the Faculty of Information Science & Technology, Universiti Kebangsaan Malaysia.

Keywords: Enterprise Resource Planning; ERP benefit; ERP implementation; Dry food packaging industry.

* Corresponding author.

E-mail address: samirasadr24@yahoo.com

1. Introduction

Previously businesses have been functioning as an organizational structure which had separated the functional fields, therefore each functional field has separated the departments. In this way, every department is completely isolated from other departments. For instance marketing and sales might be separated from supply chain management. Thus, we might conclude that what happens in one department is not closely related to other departments. These departments are interdependent, each requiring data and information from others [1].

Enterprise Resource Planning (ERP) is one the latest technologies that many organizations have undertaken [2]. ERP system is an enterprise-wide package that integrates all necessary business functions into a single system with a shared database. These software packages can be customized up to a certain limit to the specific needs of each organization [3]. ERP was characterized as the most important development in the corporate use of technology in the 1990s [4]. Unfortunately, many ERP projects have not been effective enough and hence have been unable to achieve all the results envisaged [2, 5, and 6]. As the cost of an ERP implementation project is very high, it is critical for an organization to make the project a success and start obtaining benefits out of it as fast as possible [6]. But what is it that makes an ERP implementation project successful is important to be explored. This study aims to help enterprises successfully implement ERP system by defining and categorizing the benefits in implementing ERP system.

2. Literature Review

In recent decades, the global economic deterioration caused distress on the cost of food and food packaging industries are facing, in the same as adjustment has increased and exploration on the supply chain has aggravated. ERP helps companies manage cost and monitor their supply chains. Food packaging companies and their suppliers worldwide are looking to ERP systems to streamline their businesses and shift from manual system to automatic information management systems. A holistic ERP system can replace multiple databases with a single and centralized data source, with information relating to products, services, customers and suppliers accessible by anyone in a company. These interconnected and robust systems can be powerful, integrating internal and external management information across an entire organization [7].

2.1. *Dry food packaging industry*

The dry food packaging company is an industry in the manufacturing sector that supply packaging for dry food. The business processes of this industry cover moving, storing goods, and shipping items. For dry food packaging industries, package design and shipping are the most important business activities. When package design does not follow the standard requirement, several issues may occur, such as failure to protect the product and failure to fulfill the demand of customers [8]. A case study from Ace Packaging show that the common challenges to be faced by food packaging industries are multi-site operations, multiple modes of manufacturing, inaccurate job tracking, inadequate inventory control, dragon delivery, and reliance on outdated information [9]. In order to better integrate and coordinate manufacturing, inventory and assembly functions between all locations, dry food packaging industries need to implement ERP system as a solution. By implementing ERP systems, dry food packaging industries may attain a number of benefits include coordination of enterprise-wide operations, inventory control functionality, rapid real-time data sharing, customizable interfaces, and scalable for growing business [10].

The aims of ERP systems are ambitious: to enhance the ability of the food packaging industries to operate safely, efficiently and effectively, minimizing costs, while ensuring proper labeling, handling of raw ingredients and food safety. In short, food packaging industries need to communicate and process information at full capacity, to meet demands. Some additional benefits of ERP systems for food packaging industries include tracking production costs and quality during each stage of the manufacturing process [7].

2.2. Current literature on ERP benefits

ERP system provides a number of advantages for firms to improve the organisation performance. Based on information perspective, ERP system adoption can improve the interaction between the business functions and the information is more reachable. For other issues related to the interaction between firm with the customers and suppliers, such as product delivery and inventory control management, have less influence [11 and 12]. ERP systems have more advantages in information quality and the integration of business processes and operations, but it does not decrease the information technology costs [11]. Based on Shang and Seddon [11], ERP systems have several benefits, which can be attained by organisation. These benefits are differed into five major benefits, include operational benefit, managerial benefit; strategic benefit, IT infrastructure, and organisational benefit. The research contribution from Shang and Seddon is comparable to Garg and Venkitakrishnan [13], who identified the intangible benefits of ERP system implementation, include better customer satisfaction, improve vendor performance, increase flexibility, reduce quality costs, improve resource utility, improve information accuracy, and improved decision-making capability. Olhager and Selldin [14] identified tangible benefits of ERP system, include reduction of lead time, on-time shipments, double business, increase of inventory turns to over, cycle time, and work in progress. Even though the previous researches defined and categorised the ERP benefits, there is still less research that categorises these benefits into each of business functions and decisional area. Moreover these ERP benefits did not focus on particular industry. In this study, therefore, the researchers determine the benefits of ERP systems implementation in dry food packaging industry. The next section of this paper describes research methodology, research discussion and the significance of ERP system implementation.

3. Research Methodology

This research consists of four phases, which are shown in Fig 1 below. The first phase is reviewing the literatures, include published journals and proceedings, vendor's websites, and case study. Phase two discusses the ERP benefits categorisation, which is divided based on business functions and decisional paradigm. For the next phase, the researcher explains the benefites of ERP system implementation in dry food packaging. In the last phase, the benefits of ERP system implementation are summarised from current literatures.

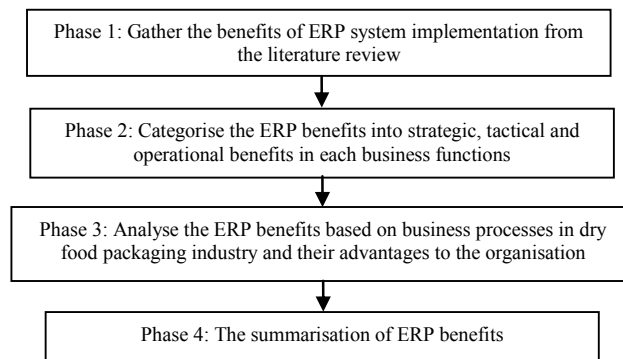


Fig. 1. The activities of analyzing the ERP benefits.

4. Discussion

As mentioned in Table 1 below, one of the strategic benefits of supplier is to improve supplier performance. By implementing an ERP system, the suppliers track the demand of the company by accessing the data from sales and marketing department and supply the items to complete the inventory of the company. This ERP benefit gives an advantage to the suppliers, with the intention that they are able to track the trend of customer demands and supply the company's raw materials faster. Furthermore, the tactical benefits can be earned by an organization for short

term plan. For instance, the implementation of ERP systems in dry food packaging companies directly force its suppliers to implement ERP systems. This benefit gives an advantage for dry food packaging industries in improving their performance. Lastly, operational benefit enabled the integration of data and information between suppliers and dry food packaging company. This capability improves the suppliers' performance to fulfil the company's demands.

Figure 2 illustrates the summarization of ERP benefits, which are divided into four internal corporate relationships: operations and logistics, financials, human resources, and sales and marketing; and two external corporate relationships: suppliers and customers. By implementing ERP systems, an organization can earn the ERP benefits in every part of corporate relationships. For example, every internal corporate relationship can improve their information accuracy, speed, quality, and availability. Moreover, the suppliers and customers can increase the interaction with the organization. In addition, these benefits are also categorized into three levels: strategic, tactical and operational benefits, in each internal and external corporate relationship. The strategic benefit defines as the benefits that an organization can earn from the ERP implementation for long term benefits.

The research is significant and important both from the theoretical and practical standpoints. From the theoretical perspective, the research finding of this research can give the big picture of ERP system benefits, however it is not explored in previous ERP research. Moreover, from the practical perspective, the executives of the company can understand more about the benefits, which can be earned in implementing ERP system, in every business functions.

Table 1. The example of ERP benefits and their interrelationship to the business processes in dry food packaging industry

Business function	Decisional area	ERP benefit	The interrelationship between ERP benefits and business processes in dry food packaging industry
SUPPLIER	Strategic	Improve supplier performance	The supplier can track the demand of the company through the data in the marketing department and supply the materials to complete the inventory of the company.
	Tactical	Tying the suppliers to the ERP system	Due to the implementation of the ERP systems in dry food packaging companies, the suppliers also have to implement this integrated information systems; therefore the suppliers can track the data and information of the dry food packaging
	Operational	Real time data access across multiple sites	By implementing the ERP systems, the suppliers can access the data of dry food packaging company.
OPERATIONS & LOGISTICS	Strategic	Generate product differentiation	Based on the customers' demands and the markets, the dry food packaging company can differentiate their products.
	Tactical	Improve the interaction between business units	The ERP systems facilitate the data and information transformation between the entire business units. This ability improves the interaction between them.
	Operational	Improve order management/order cycle	One of the activities in operations and logistics business unit is to order the raw materials from suppliers. By implementing ERP systems, the operations and logistics can improve their order management.
FINANCE	strategic	Finance information accuracy and faster decision making capability	By having data and information integration in the entire business processes, the finance business unit has finance information accuracy that can support faster decision making capability.
	Tactical	Improve cash management	ERP Financials, you can report, analyse, and allocate cash in real time, and establish in-house banks or payment centers.
	Operational	Decrease financial close cycle	ERP Financials, the dry food packaging companies can streamline accounting, consolidation, process scheduling, workflow, and collaboration.

HUMAN RESOURCE	Strategic	Improve employee performance management	By implementing ERP systems, the companies can align team and individual goals with corporate goals and strategies, standardize employee reviews and appraisals, tie compensation to performance, support a performance-oriented compensation process.
	Tactical	Improve the performance of the industry	By implementing ERP systems, the human and resource business unit in dry food packaging company can improve their activities.
	Operational	General information integration	ERP systems can integrate all of the data and information from the human and resources department with the entire departments in the dry food packaging company.
SALES & MARKETING	Strategic	Improve the interaction with customers	ERP systems help to provide a better understanding of the customer needs for the customized services and products.
	Tactical	Improve the customer services	Customer service is more than how the companies treat the customers in direct interactions at the point of sale. Customer service is also delivering a quality product, at a fair price and delivering it when it is promised. ERP systems are designed to help improve customer service in those key areas.
	Operational	Real time data access across multiple sites	By implementing the ERP systems, the employees of sales and marketing department can access the latest information of the customers.
CUSTOMER	Strategic	Better customer satisfaction	The dry food packaging companies can increase the customer satisfaction, because by implementing ERP systems, they can deliver their products faster to the customers, and the most important thing is the company can produce the best quality of the products.
	Tactical	Better customer responsiveness	Integration with outsourced customer support has improved responsiveness to customer inquiries.
	Operational	Improve on-time delivery	The dry food packaging companies can deliver their products on-time to the customers, because of the benefits that they can get from ERP system implementation, such as streamline their business processes and faster decision making.

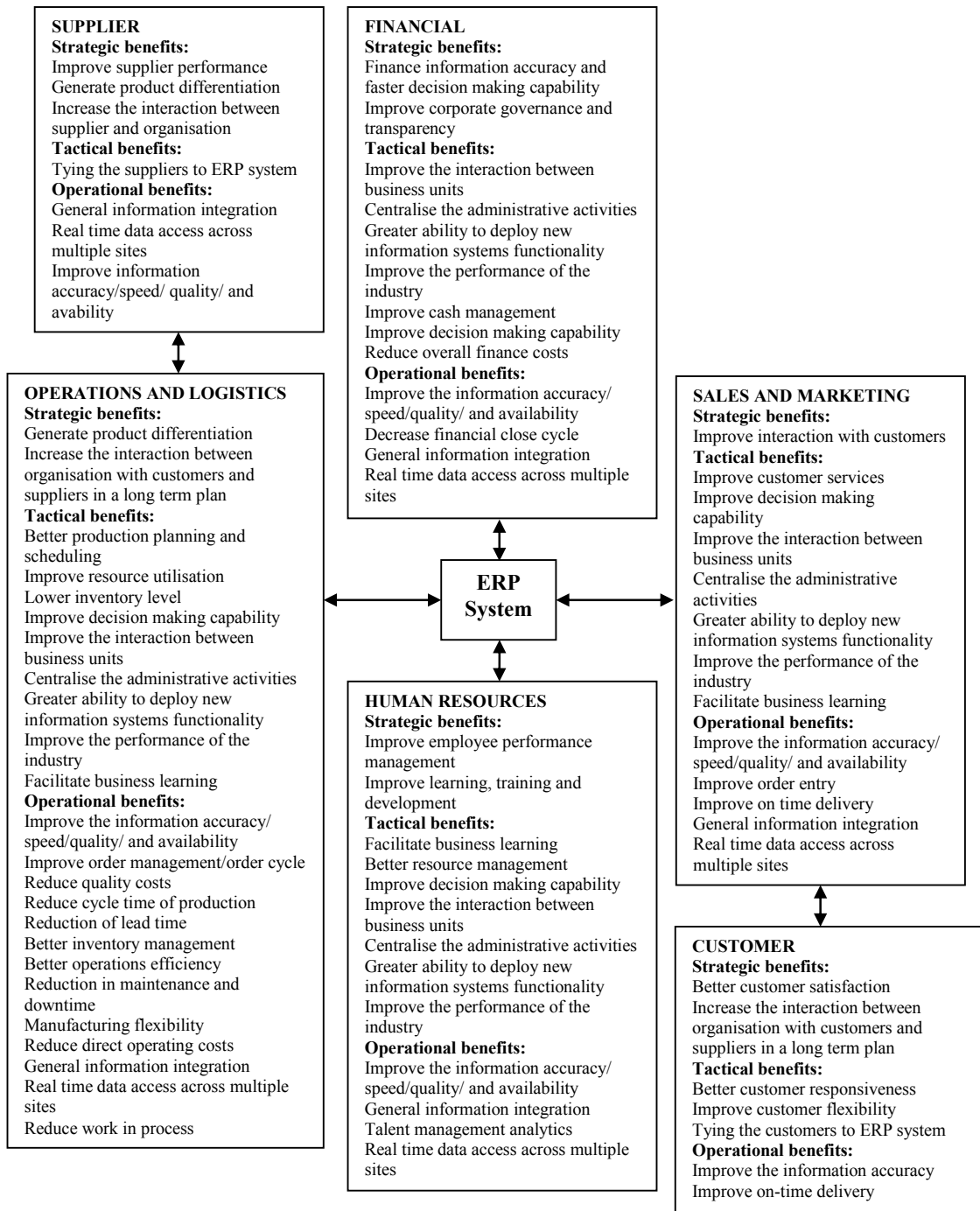


Fig 2. The summarisation of ERP benefits.

5. Conclusion

As a conclusion, the benefits of ERP system implementation is presented in this study as a research finding. The researchers determine these ERP benefits from the literatures and categorise them into internal and external corporate relationships and decisional areas in an organisation. In addition to this, in order to have comprehensive analysis, the researchers construct the interrelationships between the ERP benefits and the business process in dry food packaging industry. The researchers expect that the research findings can bridge the gap in ERP system research. Furthermore, this study may assists the practitioners, in this case dry food packaging companies, to implement ERP systems successfully.

References

- [1] Monk, E.F., Wagner, B.J. Concepts in Enterprise Resource Planning, Third Edition, Course Technology Cengage Learning 2009.
- [2] Kumar, V., Maheshwari, B., Kumar, U. An investigation of critical management issues in ERP implementation: emperical evidence from Canadian organizations, *Technovation* 2003; 2: 793-807.
- [3] Cardoso, J., Bostrom, R.P., Sheth, A. Workflow Management Systems and ERP Systems: Differences, Commonalities, and Applications, *Information Technology and Management* 2004; 5: 319-338.
- [4] Motwani, J., Akbulut, A.Y., Nidumolu, V. Successful implementation of ERP systems: a case study of an international automotive manufacturer, *International Journal of Automotive Technology and Management* 2005; 5: 375-386.
- [5] Daavenport, T.H. Putting the enterprise into the enterprise system, *Harvard Business Review* 1998; 121-131.
- [6] Sondoss El, S., Assem Abd El Fattah, T., Hassan, R.M. A Quantitative model to predict the Egyptian ERP implementation success index, *Business Process Management Journal* 2008; 14: 288-306.
- [7] Deschamps, M.J. Enterprise Resource Planning – the benefits, Information on http://www.just-food.com/management-briefing/enterprise-resource-planning-the-benefits_id119620.aspx. 2012.
- [8] Bix, L., Rafon, Lockhart, Fuente. The Packaging Matrix: IDS Packaging. 2003.
- [9] Syspro. Ace Wraps It Up with SYSPRO, Syspro Case Study: Ace Packaging Systems, Inc. 2008.
- [10] Syspro. Astrapak Standardizes on SYSPRO to Accommodate Expansion, Syspro Case Study: Astrapak. 2005.
- [11] Shang, S., Seddon, P. B. A Comprehensive Framework for Classifying the Benefits of ERP Systems. Association for Information Systems Electronic Library (AISeL), Americas Conference on Information Systems (AMCIS) 2000.
- [12] Sarkis, J., Sundarraj, R.P. Managing large-scale global enterprise resource planning systems: a case study at Texas Instruments, *International Journal of Information Management* 2003; 23(5); 431-442.
- [13] Garg, V.K., Venkitakrishnan, N.K. Enterprise Resource Planning: Concepts and Practice Ed. ke-Eastern Economy Edition, PHI Learning Pvt. Ltd. 2004.
- [14] Olhager, J., Selldin, E. Strategic Choice of Manufacturing Planning and Control Approaches: Empirical Analysis of Drivers and Performance, *APMS* 2007; 35-42.