

A LANDSCAPE OF ENTERPRISE RESOURCE PLANNING IMPLEMENTATION

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ABSTRACT. Enterprise Resource Planning (ERP) system is a business management system that comprises enterprise business elements in information system. The use of ERP software applications is to improve the performance of organizations' resource planning, management control and operational control. Literature search related to ERP reveal 297 papers. After further reading done, 77 papers were identified as a key paper for the topics chosen. In understanding the landscape of ERP in organization, we analyze 16 ERP implementation papers from the literature year 2000 to 2012. We do details search on theoretical foundation of ERP growing in the market together with ERP best complement lifecycle to be implement. Based on ERP literature analysis of ERP implementation comparison a conceptual conclusion will be made at the end of this paper. A conceptual model of ERP lifecycle will be developed to understand the stages of how to choose a quality ERP software based on organization objective. This paper will be guidelines for organization to start implement ERP software in running their business more effective and efficiency in facing the globalizations.

Keywords: Enterprise Resource Planning, ERP lifecycle

INTRODUCTION

Enterprise Resource Planning (ERP) solutions provide integration of key data and processes of an organization into one single system. These means everything that relates with that business includes humans, software, hardware, materials, manufacturing, productions, sales, marketing etc. will automatically bridge together. ERP software is super multi-module application software that integrates activities across functional departments, from production planning, parts purchasing, inventory control, and product distribution to order tracking. ERP software also may include application modules for the finance, accounting and human resources aspects of business. In additional way, ERP software allows automation and supports integration of business process. Due to this, it enables data and information sharing in introducing "best practices" in managing business process. A unified database needed to gather all data for the different system modules in making ERP systems most important elements (Malhotra & Temponi, 2010).

ERP is a system which has its goal, components and boundary. Early goals in developing ERP system is to improve and streamline internal business processes, which typically requires reengineering of current processes. Streamline business processes will automatically effect on combining all the databases so that it will become a centralized database. This typical ERP system is using multiple components of software and hardware to achieve the integration. However, emergence of new technology and concepts of ERP ensures to minimize usage of

all the components. ERP system becomes very brilliant software because of the capability in controlling and managing all data and information by using centralized databases to perform effective and efficient works in a minimal required time among departments in big organizations.

Every good thing will always have the bad things. Same goes to ERP system. ERP is well known with its powerful, intellectual and progressive software. It also has its own boundary in surviving and competing with others application. One of the fear most boundary for ERP software is the price itself. ERP is very expensive to implement in small medium organizations. Some big organizations also still not yet ready to implement ERP because of the luxurious price. There was a survey predicts that spending ERP can be reach up to \$66 billion in 2003 (Shehab, Sharp, Supramaniam, & Spedding, 2004). Imagine that predicts is basically for the year of 2003 and in the year of 2013 after 10 years of prediction, the price can be higher nowadays. There are many factors and reason involved in the rapid increasing of cost analysis structure in ERP system. Enhancement of technology either in software, hardware or tools will definitely affect the increment cost of ERP software. It was proved that total cost of ownership of an ERP system does not only include the implementation costs but also a long-term ongoing maintenance costs as well (Babey, 2006). Issues like upgrading, updating, support, and management can be consider as cost analysis for ERP system (Malhotra & Temponi, 2010). There are lot of researchers doing research on ERP implementation. They want to find and identified clearly more details about ERP itself. Both academic and industrial peoples still do the talks on this application even though ERP has been already nearly 53 years emerge in this world. The objective of this paper is to present a theoretical foundation of ERP systems and to develop a conceptual ERP lifecycle model.

A LANDSCAPE VIEW

Theoretical Foundation on ERP

ERP is actually derived from the evolution of MRP II which is Manufacturing Requirement Planning. From business perspective view, ERP has already expanded from coordination of manufacturing processes to the integration of enterprise wide backend processes. In Chen paper (Chen, 1999), he also mentioned that major purpose of MRP II is to integrate primary functions and other functions such as personnel, engineering and purchasing into the planning process to improve the efficiency of manufacturing enterprise. From technological aspect, ERP has evolved from legacy implementation to more flexible tiered client-server architecture. Table 1 below are the summarize table to show on a brief time line of the history of ERP system.

Table 1. ERP Journey of History

<i>Year</i>	<i>Journey</i>	<i>Technology</i>	<i>Theoretical Influence</i>
1960s	ERP was born in the early 1960s from a joint effort between J.I. Case the manufacturer of tractors and other construction machinery, and partner of IBM. Material Planning or MRP is the initial effort.	More to manufacturer industry.	Target on manufactured factory.
	This application software serves as the method for planning and scheduling materials for complex manufactured products (NetSuite, 2013) and (Robert Jacobs & “Ted” Weston, 2007).		

1970s	Initial MRP solutions are big, clumsy and expensive. They require a large technical staff to support the mainframe computers on which they run.	Support mainframe computers.	Started on Integrated Business Solutions.
	According to Siriginidi (Siriginidi, 2000), reduction of inventories, improved customer service, enhanced efficiency and effectiveness are some of the MRP benefits.		
	1972 - Five engineers in Manheim, Germany begin the company SAP. Purpose in creating SAP is to produce and market standard software for integrated business solutions (AG, 2013) and (Quattrone & Hopper, 2006).		
	1975 – Richard Lawson, Bill Lawson and business partner, John Cerullo begin Lawson Software. The founders see the needs for pre-packaged enterprise technology solutions as an alternative to customized business software applications (Lawson, 2001).	Customized business software application.	Pre-packaged enterprise technology solutions.
	1977 – Jack Thompson, Dan Gregory, and Ed Mc Vaney form JD Edwards (Edwards, 1996)		
	1978 – Jan Baan begins The Baan Corporation to provide financial and administrative consulting services (Baan, 1999)		Financial and administrative consulting services.
1980s	JD Edwards begins focusing on the IBM System/38 in the early 1980s. MRP evolves into MRP II as a more accessible extension to shop floor and distribution management activities (Shehab, Sharp, Supramaniam, & Spedding, 2004).	Using IBM System/38	Shop Floor and Distribution Management Activities.
	1987 – PeopleSoft was founded by Dave Duffield and Ken Morris.		
	1988 – PeopleSoft’s Human Resource Management System (HRMS) was developed (Amobi, 2008)		HRMS was developed
1990s	Baan Software was rolled out to 35 countries through indirect sales channels. The term ERP was coined in the early 1990s when MRP II was extended to cover areas like engineering, finance, human resources, and project management.		Enterprise Elements.
2001	11 th September occurs creating a drop in demand for new ERP systems (Gunson & Blasis, n.d.) and (City, n.d.)		New concept of ERP was proposed.
2002	Most ERP systems are enhancing their products to become “Internet Enabled” so that customers worldwide can have direct access to the suppliers of ERP system.	Web based	Internet based environment.

2004	Services Oriented Architecture (SOA) becomes a standard that ERP vendors work towards. This software architecture allows different systems to communicate between one another (Martins, Carrilho, Mira, Science, & Técnico, n.d.).	Network technology	Services Oriented Architecture (SOA)
2005 till current	<p>Industry consolidation occurs. Example like:</p> <ol style="list-style-type: none"> 1) Oracle – E-business suite, JD Edwards, PeopleSoft and Seibel. 2) Microsoft – Navision, Axapta, Great Plains and Solomon. 3) Infor – Baan, Mapics and a slew of other products 4) Sage – Best software is acquired. <p>The consolidations continue to occur and the key players (SP, Oracle, Infor and Microsoft) continue to build out their products.</p> <p>The next phases of ERP systems will be the merged products, including Oracle’s fusion and Microsoft’s project green’s end product.</p> <p>Changes of technology and upgrading of ERP software need to be adapted via ERP vendors and partners so that it can delivered value to their current and potential customers (Elragal & Haddara, 2012).</p>		<p>Industry consolidation occurs.</p> <p>Merged and customization on products.</p>

ERP LIFECYCLE

There are lots of model on ERP lifecycle implementation phases. Each authors have their own specifying on each model of theirs. ERP research agenda can be achieved if we really followed and understanding the lifecycle management issues of ERP (Chang, Gable, Smythe, & Timbrell, 2000). For example, Esteves & Pastor, 2001 (Esteves, 2001) developed a six phases process model which consists of Adoption Stage, Acquisition Stage, Implementation Stage, Use & Maintenance Stage, Evolution Stage and Retirement Stage. Also, Markus et al. 2000 (Markus, Axline, Petrie, & Tanis, 2000) builds four phases of process model which consists of Chartering Stage, Project Stage, Shakedown Stage and Onward & Upward Stage. Wong et al. 2003 (Wong, Scarbrough, & Davison, 2003) proved based on three models shows that ERP phases can be identified in three major stages which is pre-implementation stage, implementation stage and post-implementation stage.

Figure 1 shows the ERP Implementation lifecycle based on different phases that explain earlier. We suggested that this phases will be divided into three stages as proposed by Wong et al. 2003 (Wong et al., 2003) because of it flexibility and adoption of choosing the most appropriate various kind of ERP software based on company needs and functionality.

CONCLUSION

Seventy seven primary articles also known as anchor papers used in identifying the knowledge area in ERP history and implementation process. The result of reading represented in a conceptual model format. A conceptual model will reflect in identifying the elements in building the stages of ERP lifecycle. Based on literature review, a conceptual model as illustrated in Figure 1 produces which consist of ERP lifecycle stages based on three phases discuss by previous authors.

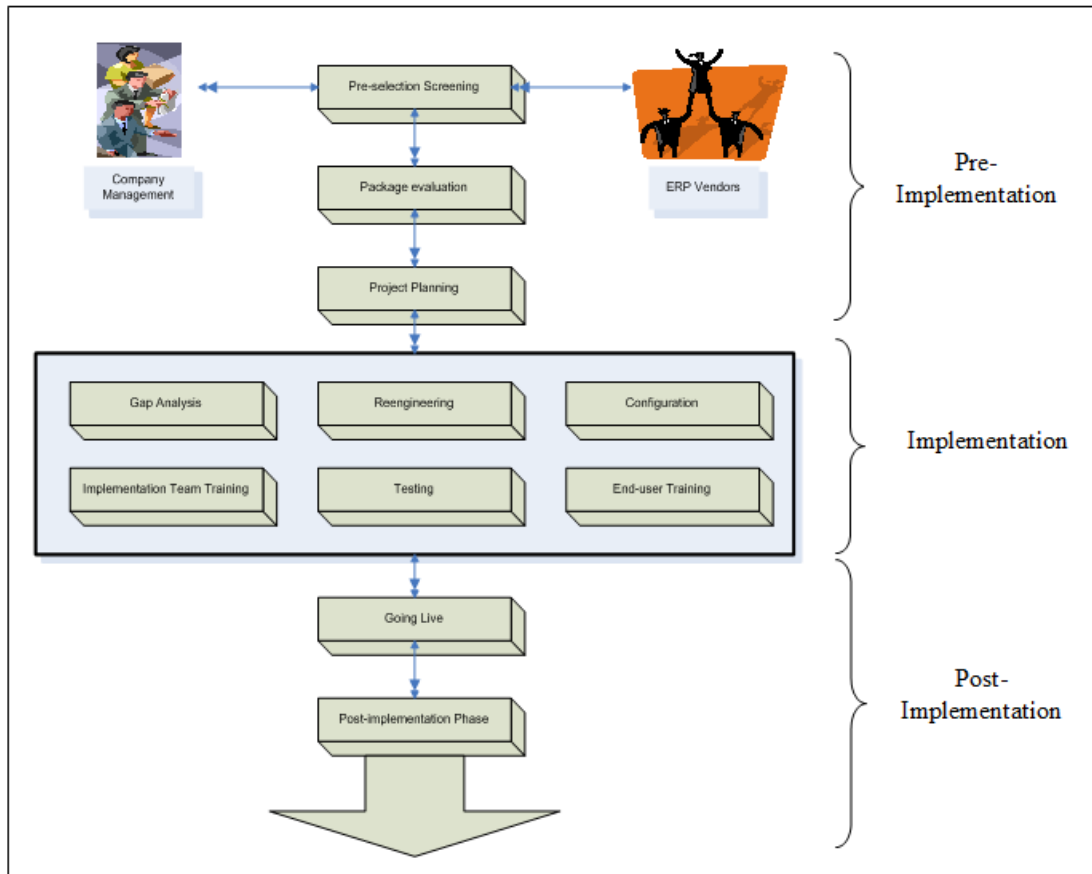


Figure 1. ERP Implementation lifecycle

This paper will definitely focused only on landscape view of ERP history and implementation of ERP lifecycle. Its purpose is to give knowledge to peoples and organizations about the growth of ERP software in market. Due to the author limitations, article filtration activity and reviewing process will only involve authors of the paper instead of group of reviewers.

A conceptual model of ERP implementation lifecycle is targeted to help organizations in doing efficient and effective selecting of ERP software that they intend to use for their business purposes. This paper will only introduce the conceptual model of ERP implementation lifecycle and will not discuss it in details. Problems that related to ERP implementations also will not be discussed in this paper since this paper is focused more on the theoretical foundation of ERP itself. Therefore, there is a need for future literature survey to know more details on ERP implementation needs in choosing a correct ERP software to develop a successful business desires in facing the globalizations and also to identify problems that related to ERP implementation nowadays.

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