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ERP Implementation Success and Knowledge Capability

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Abstract

Enterprise resource planning implementation successful is a must. In today's global and competitor in business, enterprise resource planning is becoming one of the main tools to achieve competitiveness in business. Enterprise resource planning is an infrastructure to create and maintain business to improve front-office and back-office efficiency and effectiveness. This study is significant to bring new thinking in determines the key antecedents to successful enterprise resource planning implementation based on knowledge capability perspectives and it will helps to understand the key success factor in enterprise resource planning implementation. By using online survey that sent to 150 respondents from top management level that working mostly in multinational company and using ERP system, there're 46 respondents that giving feedback to this online survey. Based on analysis by using WarpPLS 3.0, by through several test the relationship knowledge capability and ERP implementation success having beta coefficient 0.37 and P-Value <0.01. This result shows that knowledge capability that company have can influence the success of ERP implementation.

Keywords: ERP, Knowledge Capability, ERP Implementation

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1. Introduction

In digital era, technology is not as secondary strategy but as a primary strategy to achieve company mission and vision. But in reality technology is not as simple to implement and meet the company expected. One of these technologies is Enterprise Resource Planning (ERP). It is comprised of a set of applications that automate routine back-end operations such as financial management, inventory management, scheduling, order fulfillment, cost control, accounts payable and receivable, It includes front-end operations such as POS, Field Sales, Service. It also increases efficiency, improves quality, productivity, and profitability.

ERP are business applications that weave together all the data within an organization's business processes and associated functional areas. By integrating these functional areas within the business organization, ERP solutions allow an enterprise to establish one (logical) database, one integrated application and one common graphical user interface for managing all its information and transactions. Organizations implement ERPs to gain visibility into business processes and being ready to play drastic role in dynamic environments (Malhotra & Temponi, 2010).

ERP systems can bring competitive advantage to organizations; the high failure rate is a major concern (Davenport & Prusak, 1998). It is said that about70% of ERP implementations fail to deliver anticipated benefits (Al-Mashari & Zairi, 2000). Interestingly, although the failure rate of these ERP implementations has been highly publicized, companies are not distracted from investing large sum of money on ERP system (Ehie & Madsen, 2005). Indonesia is one of these developing countries that faced a dramatic increase in ERP penetration rate in recent years confronting with crucial challenges and failures in ERP systems implementations.

Although knowledge has been attributed as a key driver of ERP success, there has been very little work conducted to date that assesses the relationship of knowledge management and ERP implementation (Lee & Lee, 2000; Jones & Price, 2004; Pan, et al., 2007; Parry & Graves, 2008). Moreover, a review of recent studies of Knowledge Management in support of Enterprise Systems, suggests other limitations of past research in the area. So, the present study therefore challenges identify and examined the role of knowledge capability in the context of ERP system.

2. ERP Implementation Success

In the context of ERP implementation success, knowledge has been suggested as its critical factor (Grant, 1996; Jones & Price, 2004; Jones, et al., 2006; Lee & Lee, 2000; Pan, et al., 2007). Managing an ERP System is a knowledge intensive task that necessarily draws upon the experience and involvement of a wide range of stakeholders with diverse knowledge capabilities. Building on the resource-based view of the firm, knowledge based theory of the firm considers knowledge as a unique, the most strategically significant resource (Grant, 1996) by focusing on knowledge (Barney, 1991).

(Al-Mashari, 2003) confirms the widespread adoption of ERPs and proclaimed that "both IT practitioners and researches are still not able to determine the potential impact of ERP adoption on adopting organizations". Based on this scenario, he concludes that "the need for a new research agenda to address various issues in this context has never been more urgent". Alongside, there have been reports of organizations achieving high levels of success with ERP by focusing on effective ERP-related knowledge in organizations (Al-Mashari, 2003; Al-Mashari & Zairi, 2000; McNurlin, 2001).

DeLone and McLean proposed an IS success model that reflects the systematic combination of previously reported individual measures. The model is an attempt to represent the interdependent, process nature of six IS success constructs: (1) system quality, (2) information quality, (3) use, (4) user satisfaction, (5) individual impact, and (6) organizational impact. (Gable, et al., 2003) address the issue of

use in an ERP success model which eliminates both use and user satisfaction from the DeLone–McLean IS Success model. Satisfaction is treated as a measure of success rather than a dimension of success. (Ifinedo, 2006) proposed an ERP success model which also eliminated use and user satisfaction from the DeLone–McLean model, but adds vendor/consultant quality and workgroup impact.

Individual impact means the impact of the system on the individual working with the system, e.g., decision effectiveness or individual productivity. Organizational impact measures the impact of the system on the organization, e.g., organizational costs or staff requirements. System quality consists of measures like ease of use, flexibility or data accuracy. Information quality on the other hand consists, e.g., of timeliness, relevance or importance of the information worked up. The (Gable, et al., 2003) model can be used for measures at a certain point of time, a snapshot of the organization's experience. The impact dimensions are an assessment of benefits which are caused by the system (in a negative or positive way). The quality dimensions of the model show the future potential. Together, the four dimensions reflect a complete view of the enterprise system and the success reached (Gable, et al., 2003).

3. Knowledge Capability

Knowledge has become a very important concept in the business world. However, previous studies about what is knowledge are still controversial. First, the characteristics of knowledge have been categorized from many perspectives. However, no one agreed set of definitions has been identified. For example, (Polanyi, 1962) classifies knowledge into two categories: explicit knowledge and tacit knowledge. Explicit knowledge can be codified and shared in the form of hard data, manuals, codified procedures or universal principles, while tacit knowledge results from an individual's experience and is only revealed through its application. (Spender, 1996) proposes that knowledge can be held by individuals or collectivity. Collective knowledge comes from knowledge integration: it is the combination of the coordinated efforts of several individuals who hold different but complementary skills (Grant, 1996).

(Drawing on the work of (Polanyi, 1962; Polanyi, 1966), (Nonaka, 1994) explicated two dimensions of knowledge in organizations: tacit and explicit. Tacit knowledge which comprised of both cognitive and technical elements (Nonaka, 1994; Alavi & Leidner, 2001) is sourced in action, experience and involvement in a specific context. The cognitive elements in tacit knowledge refer to an individual's mental models and technical component consists of know-how, skills and crafts that apply to a specific context (Nonaka, 1994; Alavi & Leidner, 2001). The explicit dimension of knowledge is articulated, codified and communicated in symbolic form and/or natural language.

Knowledge capability is the systematic process of understanding, assimilating and applying an organization, to make the best use of knowledge to achieve sustainable competitive advantage and high performance. Knowledge capability provides an opportunity for achieving substantial savings, significant improvements in human performance, and enhanced competitiveness. Knowledge capability is multidisciplinary by nature and integrates concepts used in strategic management, organization theory, and information systems management. It stresses a formalized, integrated approach to managing an enterprise's intangible information assets (Albers & Trinidad, 2006).

Table 1. Construct variable for knowledge capability

Dimensions	Measurement Indicators
Understanding	We knew the general concept and functions of ERP before our company adopted it. We knew the specificities of module that we currently use before our company adopted ERP system. We knew the reputations of ERP consulting firm before our company adopted the ERP system.

	We knew careers and reputations of ERP consultants firm before our company adopted the ERP system. We knew the deliverables the ERP consulting firm would provide before our company adopted the ERP system. We knew the after-sales services that of ERP consultants would provide before our company adopted the ERP system.
Assimilating	We can use ERP very well if we have only software manuals for reference. We can use ERP very well if we can call someone else to solve our problems. We can use ERP very well if someone helps me get started. We can use ERP very well if we had a lot of time. We are qualified enough to perform tasks using ERP. We have the capability to achieve the objectives of tasks by using ERP. We have superior skills and capabilities to perform tasks using ERP compared to other corporate.
Applying	We can apply the knowledge derived from ERP to our tasks. We can apply the advanced processes derived from ERP to our tasks. We can share knowledge derived from ERP with others in the same department. We can share knowledge derived from ERP across departments. We can share my knowledge with others through the ERP network.

Sources : Adapted from (Huber, 1991; Grant, 1996; Alavi & Leidner, 2001; Park, et al., 2007; Sedera & Gable, 2010)

4. Research Model

Previous studies showing that prior knowledge on the knowledge-to-be-transferred positively affected the adoption of new technology, knowledge capability. Further, organizational members' prior knowledge base was strongly associated with their capacities to understand new and relevant knowledge. The author argued that stakeholder especially organization member could absorb novel knowledge about ERP systems more effectively if they had more prior knowledge about the ERP systems.

An ERP system is positively related to their performance of ERP usage. User knowledge capacity not only extends the pre-existing stocks of capabilities, but also creates new capabilities. The exploitation of newly acquired knowledge into everyday tasks helps organizational members set up routines those perform tasks with newly acquired knowledge, and create new knowledge (Park, et al., 2007). In addition, the capacity of users to apply knowledge can be increased by sharing activities across departments, teams, and the organization (Griffith, et al., 2003). (Nonaka & Takeuchi, 1995) contended that knowledge capability could be developed through the social transfer of knowledge. The ability to share knowledge with colleagues and other members of the organization can hence increase the capacity for applying knowledge.
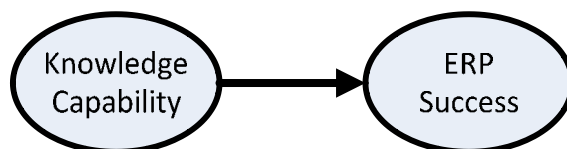

Figure 1. Research Model

5. Data Collection

Sample collection techniques used in research by using non-probability sampling. Non-probability sampling is a sampling technique that does not give the same chance or opportunity to any member of the population to be selected into the sample. The approach taken by non-probability sampling is convenience sampling. Convenience sampling is a technique of determining the sample based on chance, that anyone who by chance met the researcher could be used as a sample, if the person happens to be found and is considered to be suitable as a data source or as respondent (Sekaran & Bougie, 2010). The respondent in this study is top-level executives from the business or technological (IT) part of the organization in the company that using ERP software. The reason for this sample because top-level executives are able to evaluate the credibility and understanding of aspects of the messages obtained through experience the process of ERP implementation system and understanding through quality and impact.

By using online survey that sent to 150 respondents from top management level that working mostly in multinational company and using ERP system, there're 46 respondents that giving feedback to this online survey. Response rate for this research is about 30%. It's difficult to recommend an acceptable response rate, (Sivo, et al., 2006) have discussed the issue of low response rates in IS research. According to (Visser, et al., 1996) surveys with lower response rates do not necessarily yield less accurate measurements than surveys with higher response rates. Related with the small sample size, WarpPLS is suitable for analysis this research. Since the minimum requirement for this application is 30, and the sample in this research is 46, so the requirement sample is fulfill for further analysis.

6. Research Finding

Based on analysis by using WarpPLS 3.0, by through several test the relationship knowledge capability and ERP implementation success having beta coefficient 0.37 and P-Value <0.01. The results concluded that knowledge capability that company have can influence that success of ERP implementation. For detail results can be seen in Figure 2. Knowledge capability is measure by three indicators, understanding, assimilating and applying. And ERP success is measure by using Delone and Mclean, IS Success measurement. The variables for ERP success are system quality, information quality, individual impact and organizational impact. For knowledge capability, only assimilating do not support for knowledge capability. It is shows that P value is more than 0.05, but for understanding and applying, the two variables have contributed for knowledge capability. Each of ERP success measurement indicator support or have significant contributes. This can be seen in Figure 2, that system quality, information quality, individual impact and organizational supported the for ERP success. And the highest contribute are from individual impact and organizational impact, where individual impact contribute for the success of ERP about 74% and organizational give contribute about 72%.
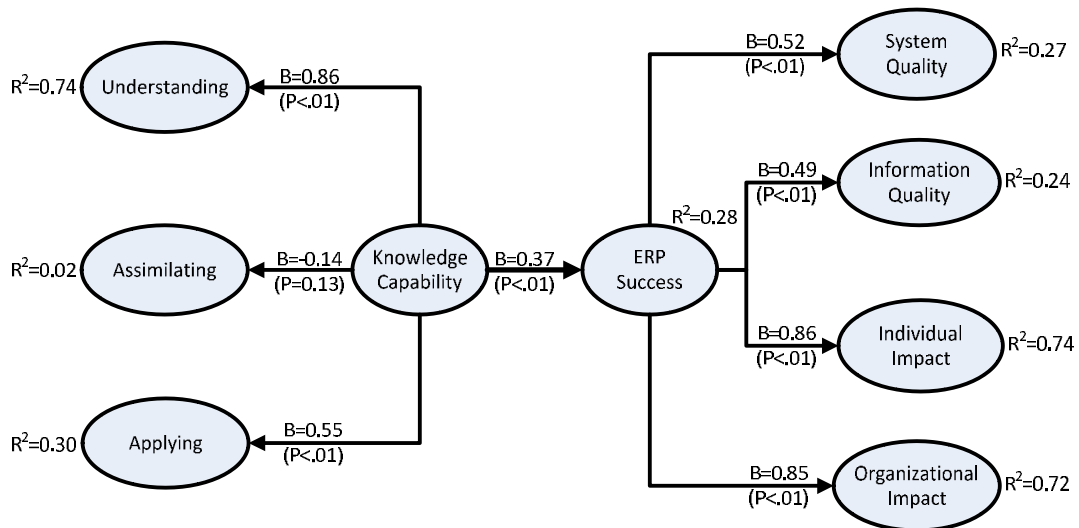
Figure 2. Result finding

7. Conclusions and Future Research

Implementation of an ERP is an extensive, lengthy, and costly process, typically measured in millions of dollars. Especially managing ERP related knowledge is a complex task that involves many stakeholders (e.g. managers, operational staff, technical) and diverse knowledge capabilities (e.g. software knowledge, business process knowledge) across the complete ERP lifecycle (e.g. implementation, post-implementation).

Although from the result finding can be concluded that knowledge capability giving significant influence to the success of ERP implementation, but still have other factor that influence this success, this can be seen, because knowledge capability only giving 28% contribution, so there's 72% that should be find out.

For future research, this model can be expanded with different respondents background, by combine respondent from consultant, user and executive level that involve in the project of ERP system. This combine respondent hopefully can explain more the relationship knowledge capability and ERP implementation success.

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