

# KNOWLEDGE MANAGEMENT AND ENTERPRISE RESOURCE PLANNING IMPLEMENTATION: A CONCEPTUAL MODEL

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## ABSTRACT

The purpose of this research is examining the influence of organizational learning and knowledge management in enterprise resource planning implementation. This study is based on organizational learning, knowledge management and enterprise resource planning implementation. This research did not test all organizational factors and focus particularly on knowledge management capacity and absorptive capability. 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 management perspectives and it will helps to understand the key success factor in enterprise resource planning implementation.

**Keywords:** Organizational Learning, Knowledge-Based View, Enterprise Resource Planning, Innovation and Culture

## 1. INTRODUCTION

In contemporary times, technology has become an important part from business activity. Technology became an important part in a business strategy. Technology is expected to make a process of the business become more efficient and effective. One of these technologies is Enterprise Resource Planning (ERP) or Enterprise System. ERP is a collection of software that has been integrated into one package for an organization's business processes to become more effective and efficient. ERP covers to manufacturing, supply chain, sales, financial, human resources, budgeting and customer service activity.

According to Turban *et al.* (2006), ERP or enterprise systems control all major business processes with single software architecture in real time. 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 have emerged as possibly the most important and challenging development in the corporate use of Information Technology (IT). Organizations like corporation have invested heavily in these large, integrated application software suites expecting improvements in business process, management expenditure, customer service and more generally, competitiveness (Sedera and Gable, 2010). The core idea in developing ERP system was catching up to the real meaning of "integration" (Mehrjerdi, 2010).

Based on Barney and Clark (2007), in Resource-Based Theory (RBT), it is determined that resources can be the sources of competitive advantage if they have the characteristics of value, rarity, inimitability and non-

substitutability. Despite the widely held belief that Information Technology (IT) is fundamental to a firm's survival and growth, scholars are struggling to specify the underlying mechanisms linking IT to financial performance. Evidence in real life business and case studies indicate that effective and efficient use of IT is a key factor differentiating successful firms from their less successful counterparts (Bharadwaj, 2000). Resource-based theorists contend that physical assets, in and of themselves, can serve as sources of competitive advantage only if they "outperform" equivalent assets of competitors (Barney, 1991).

IT also can be as a source of sustained competitive advantage. RBT and IT are believed to be possible role in creating sustained competitive advantages for the firms (Barney and Clark, 2007; Wade and Hulland, 2004). This belief based on two assertions underlying resources based theory, first this resource can be different in firm different and second this differences resource can be long lasting. Using RBV, this research will specifically investigate the relationship

organizational learning and knowledge management with successful ERP Implementation **Table 1**.

The purpose of this research is examining the influence of organizational learning and knowledge management on enterprise resource planning implementation. These research main points are conceptualizing the role of organizational learning and knowledge management in Enterprise Resource Planning Implementation **Table 2**.

## 2. LITERATURE REVIEW

This section is constructed to explain the views and/or the theories to be used as theoretical foundations of this research are threefold Resource-Based Theory (RBT), Knowledge-Based View (KBV) and Organizational Learning (OL). Beside views or theories that will be reviewed, also there are several research studies that related with Enterprise Resource Planning (ERP) and Corporate Culture that believe as factor that influence ERP Implementation Success.

**Table 1.** Research in ERP area

Representative study	Focus of research	Statistical evidence	Location
Pan <i>et al.</i> (2001); O'Leary (2002); Newell <i>et al.</i> (2003); Ko <i>et al.</i> (2005); Jones <i>et al.</i> (2006); Newell <i>et al.</i> (2006); Pan <i>et al.</i> (2007); McGinnis and Huang (2007)	Knowledge management	No	Multiple
Wang <i>et al.</i> (2007)	Knowledge management	Yes	Taiwan
Sedera and Gable (2010)	Knowledge management	Yes	Australia
Park <i>et al.</i> (2007)	Organizational learning	Yes	Korea
Present study	Knowledge Management and organizational learning	Yes	Indonesia

**Table 2.** Gaps in number of internationally published research

Topic	2005	2006	2007	2008	2009	2010	2011
Knowledge management and organizational learning	10	13	10	13	15	23	7
Knowledge management and organizational learning	1	2	0	3	5	4	1
Knowledge management and enterprise resource planning	1	0	1	2	0	0	2
Absorptive capacity and knowledge management	2	3	1	4	1	3	6
Organizational learning and enterprise resource planning	0	1	1	0	0	0	0
Knowledge management and organizational learning and enterprise resource planning	0	0	0	0	0	0	0

**Source:** Search from [www.proquest.com](http://www.proquest.com) and [www.sciencedirect.com](http://www.sciencedirect.com) on May 2, 2011

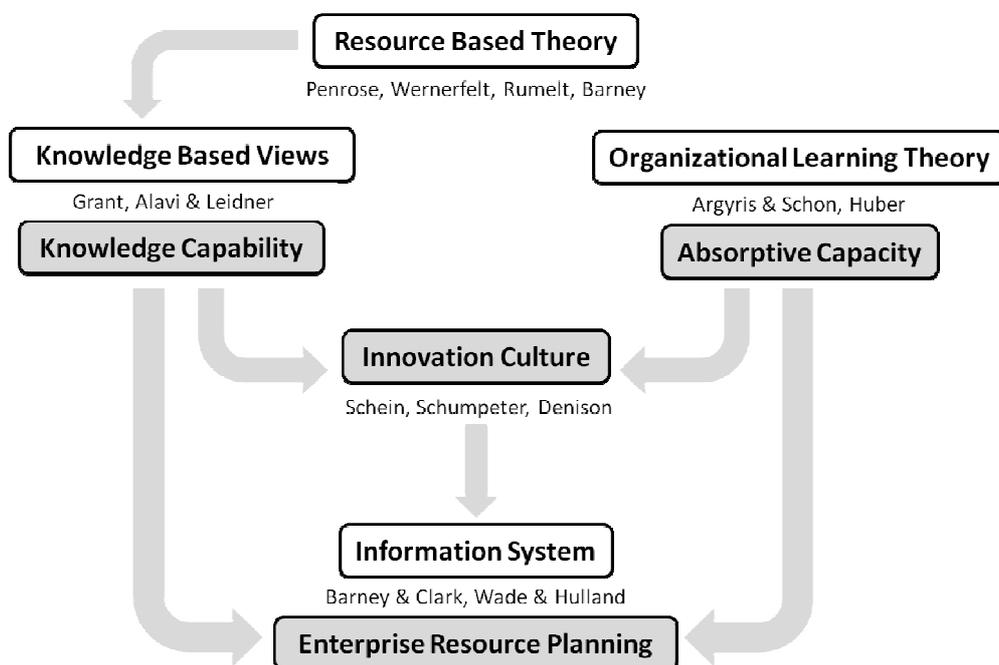


Fig. 1. Theoretical foundations of the theories/views

In general, the flow of views and/or theories as theoretical foundations of this research is described in Fig. 1 below.

## 2.1. ERP and ERP Implementation Success

ERP systems can be regarded as one of the most innovative developments in Information Technology (IT) of the 1990s. With growing interest of many organizations in moving from functional to process-based IT infrastructure, ERP systems have become one of today's most widespread IT solutions (Al-Mashari, 2003). Enterprise systems are clearly a phenomenon in the IT marketplace. Their potential significance for computer-using organizations cannot be overstated. They represent a nearly complete re architecting of an organization's portfolio of transactions processing applications systems to achieve integration of business processes, systems and information-along with corresponding changes in the supporting computing platform (hardware, software, databases and telecommunications) (Markus and Tanis, 2000).

ERP encompasses a wide range of software products supporting day-to-day business operations and decision-making. ERP systems serve many industries and functional areas in an integrated fashion, attempting to automate operations from the supply chain management,

inventory control, manufacturing scheduling, sales support, customer relationship management, financial and cost accounting, human resources and many other functional areas in an organization (Sedera *et al.*, 2003).

According to Markus and Tanis (2000) Enterprise systems have several characteristics, each with important implications for the organizations that adopt them. Integration, Enterprise systems promise seamless integration of all the information following through a company-financial and accounting information, human resource information, supply chain information and customer information. Packages, Enterprise systems are commercial packages; that is, they are purchased or leased from software vendors rather than being developed in-house from scratch. Best Practices, because they are designed to fit the needs of many organizations, enterprise systems are built to support generic business processes that may differ quite substantially from the way any particular organization does business.

Implementation of ERP is a complex process, deals with many conditions and factors that will be influence every aspect of implementation. These conditions can have positive and also negative outcome to the implementation. The results of some recent studies related to ERP implementation success factors will be describe following this review.

According to Bhatti (2005) implementing an ERP system project is a difficult and high cost proposition as it places tremendous demands on an organization's time and resources. Based on a survey of 53 organizations in Australia, the results suggest that a 65 item instrument that measures seven dimensions of ERP implementation is well-validated. Bhatti (2005) suggested several factors that influenced the success of ERP: Project management, process redesign, user training, technological infrastructure, change management, risk management, top management support, communication, team work, user involvement, use of consultant, clear goals and objectives and for the success outcome, there are two measure, project outcome and business outcome.

In another research Nah *et al.* (2001) investigated success factors for ERP implementation by conducting a literature review. According to their research, there are several factors that influence success factor of ERP implementation. These factors are teamwork, change management, top management support, plan and vision, business process management and development, project management, monitoring, effective communication, software development and testing, the role of the project champion and appropriate business and IT legacy systems.

Zabjek *et al.* (2009) also pointed out several factors critical to ERP implementation. These factors are top management support, clear goals and objective, project team organization and competence, user training and education, business process engineering, change management, communication, user involvement and participation, legacy system management, consulting services, project management, sponsorship, system, technological and minimal customization. These factors have a positive impact on successful ERP implementation and should be treated as very important in ERP systems implementation projects. The results also support the importance of top management perception: If they consider business process management as a basis of business change, this contributes to a strong and positive influence on successful ERP implementation. Recent study by Supramaniam and Kuppusamy (2010) highlighted several factors such as top management support, clear goals and objectives, user training on software and education on new business processes.

## 2.2. Resource-Based Theory (RBT)

RBT rooted from resource-based view that emerged in the 1980s partly in reaction to the perceived external environment-bias of the dominant competitive strategy paradigm. RBT is one of the frameworks in the strategic management literatures (Newbert, 2007). Based on Wernerfelt (1984), for the firm, resources and products

are two sides of the same coin. Most products require the services of several resources and most resources can be used in several products. By specifying the size of the firm's activity in different product markets, it is possible to infer the minimum necessary resource commitments. Conversely, by specifying a resource profile for a firm, it is possible to find the optimal product-market activities.

That same year, Rumelt (1991) published a second resource-based paper in a book of readings coming out of a conference on strategic management. While these papers addressed similar kinds of issues, they did not refer to each other. Where Wernerfelt (1984) focused on establishing the possibility that a theory of firm performance differences could be developed in terms of the resources that a firm controls, Rumelt began describing a strategic theory of the firm, that is, a theory explaining why firms exist, that focused on the ability of firms to generate economic rents (Freeman *et al.*, 2001).

Barney (1986) introduces the concept of strategic factor markets as the market where firms acquire or develop the resources they need to implement their product market strategies. While this influential body of research within the field of strategic management was named by Wernerfelt (1984) in his article A Resource-Based Theory of the Firm, the origins of the resource-based theory can be traced back to earlier research. Retrospectively, elements can be found in works by Coase (1937); Stigler (1961) and Chandler (1977), where emphasis is put on the importance of resources and its implications for firm performance (Mahoney and Pandian, 1992; Rugman and Verbeke, 2002).

## 2.3. Knowledge-Based View (KBV)

The objectives of KBV are to make the enterprise act as intelligently as possible to secure its viability and overall success and to otherwise realize the best value of its knowledge assets (Grant, 1996). In other words, knowledge is the most strategically important resource of the firm. Its proponents argue that because knowledge-based resources are usually difficult to imitate and socially complex, heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance.

This knowledge is embedded and carried through multiple entities including organizational culture and identity, policies, routines, documents, systems and employees. Originating from the strategic management literature, this perspective builds upon and extends the Resource-Based View of the firm (RBV) initially promoted by Penrose (1995) and later expanded by others (Wernerfelt, 1984; Barney, 1991; Conner, 1991).

Information technologies can play an important role in the knowledge-based view of the firm in that information systems can be used to synthesize, enhance and expedite large-scale intra- and inter-firm knowledge management (Alavi and Leidner, 2001).

#### 2.4. Organizational Learning Theory

The basic assumption in most organizational learning theory is that learning is socially constructed, that is, what is learned and how learning occurs are fundamentally connected to the context in which that learning occurs (Lane *et al.*, 2001). Argyris and Schon (1978) defines organizational learning as the process of “detection and correction of errors”. In their view organizations learn through individuals acting as agents for them: “The individuals’ learning activities, in turn, are facilitated or inhibited by an ecological system of factors that may be called an organizational learning system”.

One key aspect of organizational learning to remember is that an organization should not lose out on its learning abilities when members of the organization leave. The concept of organizational memory means that effective learning organizations should not only influence the current members, but also future members due to the experiences, beliefs and norms that are accumulated along the way. Creating a learning organization is only half the solution to a challenging problem (Prahalad and Hamel, 1990). Equally important is unlearning some of the past that has not moved the company forward on a path of healthy growth.

Huber (1991) considers four constructs as integrally linked to organizational learning: Knowledge acquisition, information distribution, information interpretation and organizational memory. He clarifies that learning need not be conscious or intentional. Further, learning does not always increase the learner’s effectiveness, or even potential effectiveness. Moreover, learning need not result in observable changes in behavior. Taking a behavioral perspective, Huber (1991) notes: An entity learns if, through its processing of information, the range of its potential behaviors is changed.

Argyris and Schon (1978) suggest that there are “deeper” reasons behind the implementation gap of Information System, especially when the technology was used to deal with the more complex and ill-structured problems faced by the organization. They suggest that the information systems need to be viewed as a part of a more general problem of Organizational Learning.

#### 2.5. Innovation and Culture

The term innovation derives from the Latin *innovatio*, the noun of action from *innovare*. The word

first came into modern use in 1540 and stems from the Latin *innovatus*, pp. of *innovare* “to renew or change,” from in- “into” + novus “new”. Although the term is broadly used, innovation generally refers to the creation or improvement of products, technologies, or ideas. Innovation is distinguished from renovation in that innovation generally signifies a substantial change or difference versus more incremental changes.

Innovation has been recognized as a key element of dynamic efficiency and competition of markets since the work of Schumpeter (1934). Following Schumpeter (1934), contributors to the scholarly literature on innovation typically distinguish between invention, an idea made manifest and innovation, ideas applied successfully in practice. In economics the change must increase value, customer value, or producer value. The goal of innovation is positive change, to make someone or something better.

A key component in the success of industrial firms is the extent of their innovativeness. Innovativeness relates to the firm’s capacity to engage in innovation; that is, the introduction of new processes, products, or ideas in the organization (Hult *et al.*, 2004). The current situation of the environment (e.g., uncertainty, high risk and volatility) involves that firms need develop innovations in order to maintain or increase their competitiveness. The capacity to innovate is among the most important factors that impact business performance (Hurley and Hult, 1998). Successful organizations have the capacity to absorb innovation into the organizational culture and management processes of the organization (Syrett and Lammiman, 1997; O’Reilly and Tushman, 2002). According to (O’Reilly and Tushman, 2002), organization culture lies at the heart of innovation.

Taylor (1871) provides one of the earliest definitions of culture: “the complex whole which includes knowledge, belief, art, morals, custom and any other capabilities and habit acquired by man as a member of society”. According to Schein (2009) organizational culture as a pattern of basic assumptions-invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration. Such a pattern has worked well enough to be considered valuable and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems.

### 3. RESEARCH MODEL

This is a proposed research model to seek the role of knowledge management in ERP implementation success.

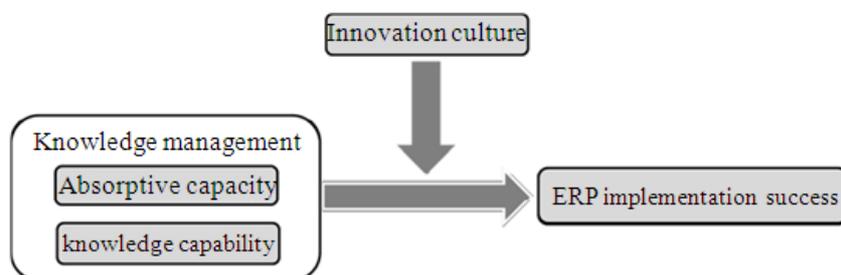


Fig. 2. Proposed research model

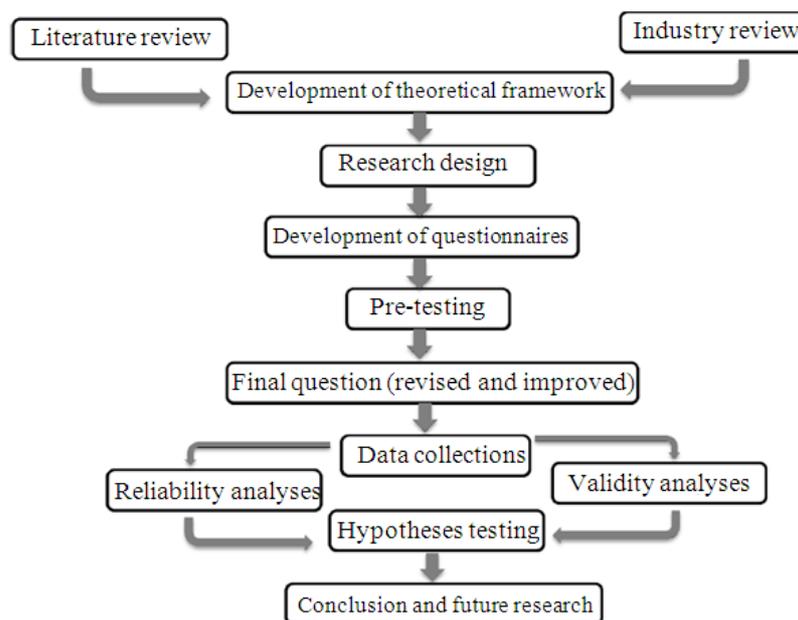


Fig. 3. Research process and plan

Table 3. Construct of variables

	Variables	Dimensions	References
Organizational learning	Absorptive capacity	Acquisition assimilation transformation exploitation	Crossan <i>et al.</i> (1999); Huber (1991); Alavi and Leidner (2001); Jimenez-Barrionuevo <i>et al.</i> (2011); Lane <i>et al.</i> (2001)
Knowledge based views	knowledge capability	Knowledge creation knowledge retention knowledge transfer knowledge application	Gable <i>et al.</i> (2008) Grant (1996); Pan <i>et al.</i> (2001); Alavi and Leidner (2001); Tanriverdi (2005)
Culture	innovation culture	Innovation intention innovation infrastructure innovation influence innovation implementation	Dobni (2006); Hult <i>et al.</i> (2004) Hurley and Hult (1998) Skerlavaj <i>et al.</i> (2010)
ERP	ERP implementation successful	System quality Information quality Individual impact organization impact	Gable <i>et al.</i> (2008); Petter <i>et al.</i> (2008); Lee <i>et al.</i> (2007); Beshnahan (1996);

As seen on **Fig. 2**. The research model is based on OL and KBV. Absorptive capacity will be variable in organizational learning; the dimensions are acquisition, assimilation, transformation, exploitation (Crossan *et al.*, 1999; Huber, 1991; Alavi and Leidner, 2001; Lane *et al.*, 2001). Dimension for knowledge capability are knowledge creation, knowledge retention, knowledge transfer, knowledge application (Gable *et al.*, 2008; Grant, 1996; Alavi and Leidner, 2001; Tanriverdi, 2005). Dimensions for innovation culture are innovation intention, innovation infrastructure, innovation influence, innovation implementation **Table 3** (Dobni, 2006; Hult *et al.*, 2004; Hurley and Hult, 1998; Skerlavaj *et al.*, 2010).

#### 4. RESEARCH DESIGN

The flow of thinking framework will be developed from literature and industry review as constructed in this research methodology to ensure that the research design, plan and execution of this research can be implemented as planned and scheduled. Furthermore, the research methodology is formulated in order that the objectives of the research can be achieved. Basically, scientific research is divided into two categories applied and basic research, as refer to code of ethics and specific social behavior norms. This research is categorized as an applied research, to be designed based on in-depth review of literatures, empirical research concept and understanding about research object. The process and work-plan of this research are designed systematically, started from literature and industry reviews and ended with the setup of completed report of dissertation. In general, the process and work plan of this research are described in **Fig. 3**.

#### 5. CONCLUSION

This study is significant to bring new thinking in determines the key antecedents to successful enterprise resource planning implementation based on knowledge management perspectives and it will helps to understand the key success factor in enterprise resource planning implementation. Future research could assess the influence of organizational and knowledge on enterprise resource planning implementation success with more in-depth dimension and measurement items.

Enterprise resource planning implementation successful is a must. In today's global business and competitor in business, enterprise resource planning is becoming one of the main tools to achieve competitiveness in business environment. Enterprise

resource planning is an infrastructure to create and maintain business to improve front-office and back-office efficiency and effectiveness. A better understanding of the factors affecting the success of ERP Implementation will benefit practitioners who implement these systems. Organization from small through enterprise that currently beginning or planning ERP Implementations, will benefits from this knowledge.

Future research could assess the influence of organizational and knowledge on enterprise resource planning implementation success with more in-depth dimension and measurement items. Enterprise resource planning implementation successful is a must.

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