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Using Importance-Performance Analysis for Knowledge Capability in Enterprise Resource Planning

Sevenpri Candra
Bina Nusantara University, School of Business Management,
Jl.K.H. Syahdan No. 9, Palmerah/Kemanggisan, 11480 Jakarta, Indonesia

Abstract: The purpose of this research is doing several items in knowledge capability in ERP. By using Importance-Performance Analysis (IPA), the gap that happens in knowledge capability is analysis. Data collection using online questionnaire and send to IT experts. The importance-performance analysis grid is divided by two dimensional grid where grid broken into 4 categories: Concentrate here, keep up the good research, low priority and possible overkill to enable each of knowledge capability item to be plotted into the grid. It is a clear and powerful evaluation tool for organization that implement enterprise resource planning to find out items that are doing well and items that need to be improved which require action immediately. The results are useful in identifying which are the items in knowledge capability that should be aware by the organization when implement enterprise resource planning.

Key words: Knowledge capability, ERP, enterprise resource planning, importance-performance analysis, IPA

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.

Although, ERP systems can bring competitive advantage to organizations, the high failure rate is a major concern (Davenport and Prusak, 1998). It is said that about 70% of ERP implementations fail to deliver anticipated benefits (Al-Mashari and Zairi, 2000). 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.

ERP implementation in Indonesian companies is expected to speed up business process, improve efficiency and create bigger revenue. The problem is in the implementation process there are many factors which can creates failure in the process. One of these factors is lack of management's commitments. Management does not provide the best team for implementing this project includes team members competency, credibility, creativity, ineffective leadership, low team commitment, overlapped responsibilities in the team, unclear working approach and lack of comprehension in the team's purpose.

Literature review: The objectives of Knowledge Base View (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 (1980) and later expanded by researchers (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 accelerate large-scale intra and inter-firm knowledge management (Alavi and Leidner, 2001).

(Davenport and Prusak, 1998) defines knowledge, as a fluid mix of framed experience, value, contextual information and expert insights that provides a framework for evaluating and incorporating new experiences and information. Drawing on the research of Polanyi (1962, 1997) and Nonaka (1994) explicated 2 dimensions of knowledge in organizations: Tacit and explicit. Tacit knowledge which comprised of both cognitive and technical elements (Nonaka, 1994; Alavi and 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 and 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 and Trinidad, 2006).

MATERIALS AND METHODS

Data collection method: 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 and 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. There are 150 respondents that meet the requirement for this research and according to Roscoe (1975), Bentler and Chou (1987) and Hair *et al.* (2010) total of sample is fulfill enough. Data for this research was collected through online survey via Google Docs. Each email was sent personally one by one.

RESULTS AND DISCUSSION

Gap analysis is an analysis of the performance and importance to see a thing. In business and economics, gap analysis is a tool that helps companies compares actual performance with potential performance. At its core are 2 questions: Where are researchers? And where do researchers want to be? If a company or organization does not make the best use of current resources or foregoes investment in technology, it may produce or perform below its potential. Gap analysis identifies gaps between the optimized allocation and integration of the inputs (resources) and the current allocation level.

Importance Performance Analysis (IPA) is an evaluation tool to analysis the gap between importance and performance. IPA evaluation tool is used to prescribe the prioritization of attributes for improvement and guidance for strategy (Martilla and James, 1977). The 2 dimensional IPA model is divided into 4 quadrants with performance on the x-axis and importance on the y-axis. As a result of this, 4 quadrants called concentrate Here, keep up the good work, low priority and possible overkill. The quadrants can be used to generate solution for knowledge capability and key stakeholder readiness by differencing between them into 4 quadrants. An example of IPA grid is shown in Fig. 1.

- Quadrant 1 (high importance, low performance) is namely concentrate here. Attributes that fall into this quadrant represent the key areas that need to be improved with top priority

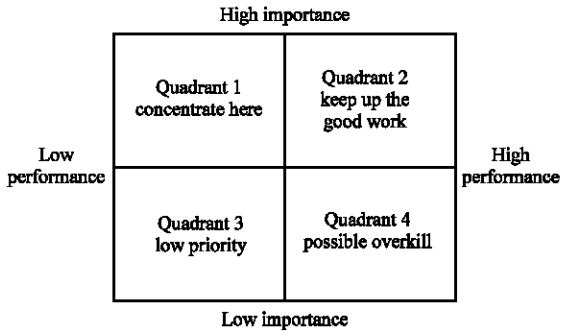

Fig. 1: The IPA framework (Martilla and James, 1977)

Table 1: Gap analysis between importance-performance for knowledge capability

Description	Importance	Performance	Gap (%)
We knew the general concept and functions of ERP before our company adopted it (UNDER1)	4.04	3.89	96
We knew the specificities of module that researchers currently use before our company adopted ERP system (UNDER2)	4.07	3.83	94
We knew the reputations of ERP consulting firm before the company adopted the ERP system (UNDER3)	4.22	4.02	95
We knew careers and reputations of ERP consultants firm before our company adopted the ERP system (UNDER4)	4.11	3.85	94
We knew the deliverables the ERP consulting firm would provide before our company adopted the ERP system (UNDER5)	4.02	3.98	99
We knew the after-sales services that of ERP consultants would provide before our company adopted the ERP system (UNDER6)	3.96	3.93	99
We can use ERP very well if researchers have only software manuals for reference (ASSIM1)	3.43	3.00	87
We can use ERP very well if researchers can call someone else to solve our problems (ASSIM2)	3.57	3.24	91
We can use ERP very well if someone helps me get started (ASSIM3)	4.00	3.93	98
We can use ERP very well if we had a lot of time (ASSIM4)	3.22	3.15	98
We are qualified enough to perform tasks using ERP (ASSIM5)	3.98	3.91	98
We have the capability to achieve the objectives of tasks by using ERP (ASSIM6)	4.02	4.04	101
We have superior skills and capabilities to perform tasks using ERP compared to other corporate (ASSIM7)	3.89	3.70	95
We can apply the knowledge derived from ERP to our tasks (APPLY1)	4.11	4.13	101
We can apply the advanced processes derived from ERP to our tasks (APPLY2)	4.13	4.13	100
We can share knowledge derived from ERP with others in the same department (APPLY3)	4.15	4.15	100
We can share knowledge derived from ERP across departments (APPLY4)	4.04	4.04	100
We can share my knowledge with others through the ERP network (APPLY5)	3.83	3.83	100

- Quadrant 2 (high importance, high performance) is namely keep up the good work. All attributes that fall into this quadrant are the strength of the organization and should be maintain to achieve continuous improvement.
- Quadrant 3 (low importance, low performance) is namely low priority. Any of the attributes that fall into this quadrant not really important and pose no threat to the organizations
- Quadrant 4 (low importance, high performance) is namely possible overkill. This attributes denotes that are overly emphasized by the organizations therefore, organizations should reflect on these attributes, instead of continuing to focus in this quadrant, organizations should allocate more resources to deal with attributes that reside in quadrant 1

Table 1 describes gap analysis between importance and performance for knowledge capability where there're 3 dimensions (understanding, assimilating and applying). For understanding there are 6 item measurement indicators, from No. 1 until 6. For assimilating, there are 7 item measurement indicators. The items are from No. 7 until 13. For applying, there are 5 item measurement indicators, from item No. 14 until 18.

Based on Table 1 can concluded that the 3 most important items for knowledge capability from the perspective of top management level are researchers knew the reputations of ERP consulting firm before the company adopted the ERP system. UNDER3, researchers can share knowledge derived from ERP with others in the same department (APPLY3) and researchers can apply the advanced processes derived from ERP to the

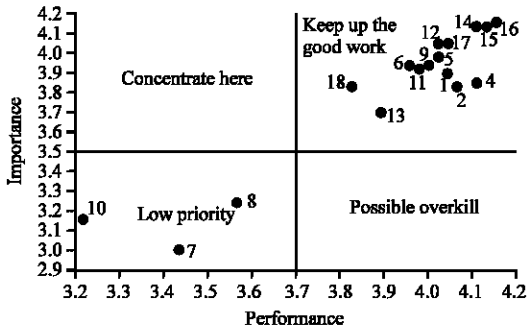

Fig. 2: IPA for knowledge capability

tasks (APPLY2). Based on this finding can be concluded that organization is require to get to know the reputations of ERP consulting before they implement the system and after they implement, they hope that organization especially the user will have knowledge from ERP system to improve each other in the same department and optimize their task.

Figure 2 describe IPA for knowledge capability where the intersection in the IPA is calculated by using the mean level of importance at 3.50 and the mean level of performance 3.70. in quadrant 1, concentrate here, there's nothing further to be improve. But in quadrant 2, keep up the good work, there're several things that should be maintain and continuous improve. There are 14 items at quadrant 2. The items are:

- We knew the general concept and functions of ERP before our company adopted it (UNDER1)
- We knew the specificities of module that we currently use before our company adopted ERP system (UNDER2)

- We knew careers and reputations of ERP consultants firm before the company adopted the ERP system (UNDER4)
- We knew the deliverables the ERP consulting firm would provide before the company adopted the ERP system (UNDER5)
- We knew the after-sales services that of ERP consultants would provide before our company adopted the ERP system (UNDER6)
- We can use ERP very well if someone helps me get started (ASSIM3)
- We are qualified enough to perform tasks using ERP (ASSIM5)
- We have the capability to achieve the objectives of tasks by using ERP (ASSIM6)
- We can apply the knowledge derived from ERP to the tasks (APPLY1)
- We can apply the advanced processes derived from ERP to the tasks (APPLY2)
- We can share knowledge derived from ERP with others in the same department (APPLY3)
- We can share knowledge derived from ERP across departments (APPLY4)

Some of item that are literally categorized as low priority in quadrant 3 are:

- We can use ERP very well if researchers have only software manuals for reference (ASSIM1)
- We can use ERP very well if researchers had a lot of time (ASSIM4)
- We can use ERP very well if researchers can call someone else to solve the problems (ASSIM2)

Based on this finding, organization more focus to keep their good work for item 1, 2, 4, 5, 6, 9, 11, 12, 14, 15, 16, 17 and 18. And organization has low priority for item 7-8 and 10.

CONCLUSION

Based on the findings, of this results can be concluded that knowledge capability have role that significant in ERP implementation success. More inside about knowledge capability, there're several factor that should be maintain by the organization to achieve this implementation of ERP will be success. Factor from knowledge capability that should be maintained and do continuous improvements are about the knowledge of general concept and function of ERP, module of ERP, consultant and vendor that will be chosen for implement ERP system, after sales service, support from ERP expert, qualified user that using ERP, process transfer knowledge of ERP in the organizations and also in their department.

LIMITATION

One of the limitations of this study is the lack of respondent that contribute to this survey. From 150 respondents, only 46 respondents that fill in the survey and the response rate are about 30%. Although, the total of respondents meet the minimum requirement statistical tools analysis but its more confidence to have large respondents. The composition of the respondents profile is another limitation of this study. In particular, the respondents collected from IT professional and top management at C-level in their organization but in reality only 44% respondents at C-level. From C-level can divided by two categories, first CEO/Director is 7% and second CIO/VP IT is 37%.

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