

A Proposed Factors Affecting Knowledge Management Effectiveness: State of the Art and Direction for Future Work

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Abstract

Knowledge is the source of competitive advantage and optimal performance. Researchers have inconclusive findings regarding the factors that constitute the knowledge management (KM) effectiveness and their effects on organizational measures such as innovation and competitive advantage. The purpose of this study is to review and integrate the literature to identify the factors that affect the KM effectiveness. A total of fifteen articles are reviewed. The findings indicate that knowledge process capabilities such as knowledge acquisition, knowledge sharing, knowledge application, and knowledge protection are more important than the knowledge infrastructure capabilities. In addition, knowledge sharing is the most important factor that affects the KM effectiveness. The findings also show that 88% of studies are conducted in business organizations with 88% using quantitative approach. The respondents of reviewed articles are managers and postgraduate level employees. Directions of future work include scope, respondents, location, and approach.

Keywords: Knowledge Management, KM CAPABILITIES, Review of KM, KM effectiveness, Organizational Performance

1. Introduction

The desire of stakeholders to implement knowledge management (KM) effectively has increased due to the benefit of KM implementation (Supar et al., 2005). Theories such as the resource based view (RBV) and the knowledge based view (KBV) emphasized on the importance of knowledge to achieve superior performance and competitive advantage (Grant, 1996). KM capabilities have emerged as tools that are proven to have significant effects on the organizational success (Gold et al., 2001; Cepeda & Vera, 2007; Tseng, 2014; Abdullah et al., 2009; Abidin-Mohamed et al., 2009; Sambasivan et al., 2011). It is defined as the ability to mobilize and deploy KM-based resources in combination with other resources and capabilities (Chang & Chuang, 2011).

KM capabilities are divided into two main capabilities: process and infrastructure. Elements such as knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection comprised the knowledge process capabilities. Technology infrastructure, organizational culture, and structure comprised the knowledge infrastructure capabilities (Gold et al., 2001). Other researchers have a different perspective toward the elements of KM capabilities (Özbağ et al., 2013; Aujirapongpan et al., 2010). In another article, it is also articulated that there is variation among researchers regarding what constitutes KM capabilities (Villar et al., 2014). It is also found that there is no agreement between researchers on the factors that affect the organizational measures such as KM effectiveness. While some researchers relate the factors to knowledge application or knowledge sharing (Mills & Smith, 2011; Liu & Deng, 2015) others view organizational culture and structure are more important (Pandey & Dutta, 2013). Researchers also have no agreement on the factors that affect KM effectiveness in organizations and they tend to relate the effect of KM capabilities to either processes or infrastructure (Chuang, 2004; Liu et al., 2004; Tseng, 2014). Few studies have investigated both capabilities together (Gold et al., 2001; Alaarj et al., 2015).

Consequently, the aim is to review and integrate the literature to identify the factors of KM that leads to superior performance for organizations. The latter sections of this study explains and discusses the literature review, the research methodology, the analysis and discussion, and lastly, the conclusion, the limitations, and direction of future works.

2. Literature Review

2.1 Knowledge Based View

Most of the studies that investigate the knowledge management refer to the knowledge based view which was developed based on the resource based view. The theory posits that managing the knowledge of organizations leads to superior performance and competitive advantages. It considers knowledge as the most important strategic resource (Grant, 1996). This is because knowledge is usually difficult to imitate and is socially complex, heterogeneous knowledge bases and capabilities among organizations are the major determinants of sustained competitive advantage and superior organizational performance. Accordingly, researchers consider the knowledge based view as a perfect theory to be implemented in the field of KM and KMC related studies (Jensen et al., 2013). Knowledge based view was the basis for the knowledge management capabilities model by Gold et al. (2001). That theory is presented in this study to identify the theoretical background that supports the

studies in the knowledge management field.

2.2 Knowledge Management Capabilities

Previous studies have not yet come to agreement regarding the definition of KM capabilities (Desouza & Awazu, 2005). There are many definitions used by researchers. The organizational ability to accumulate critical knowledge resources and manage their assimilation and exploitation (Miranda et al., 2011) or as the ability to mobilize and deploy KM-based resources in combination with other resources and capabilities (Chang & Chuang, 2011) are definitions of KM capabilities. Some other definitions have focused mainly on either processes of KM capabilities or the infrastructure. For instance, the definition of Liu et al. (2004) focused more on the processes of KM capabilities and defined it as the ability of an organization to acquire, convert, apply, and protect knowledge to encourage staff to share knowledge and work more efficiently. Knowledge processes again were the key points of the definition of Chen and Fong (2012) who defined KM capabilities as the ability of organizations to leverage high level knowledge based routines that are supported by learning processes acquired from knowledge processes.

KM capabilities includes processes such as creating, sharing, applying, and protecting knowledge. The above definitions focused more on process capabilities, however, the definition of Chang and Chuang (2011) is more general and refers to the ability of an organization to utilize its existing resources and capabilities to create and benefit from existing knowledge within the organization. The definition of Chang and Chuang (2011) is adopted in this study because it is more related to its context

2.2.2 Element of KM Capabilities and Existing Framework

Previous studies divided KM capabilities into two main parts. The first part is the knowledge process capabilities and the second is the knowledge infrastructure capabilities. This categorization of knowledge is based on the pioneering work of Gold et al. (2001) who divided KM capabilities into processes and infrastructure capabilities. Gold et al. (2001) examined the effect of KM capabilities on organizational performance. KM capabilities is conceptualized as knowledge process capabilities and knowledge infrastructure capabilities. Technology infrastructure, organizational culture, and organizational structure are the elements of infrastructure capabilities. For the knowledge process capabilities, the elements are knowledge acquisition, knowledge application, knowledge conversion, and knowledge protection.

Fan et al. (2009) followed the same approach of Gold et al. (2001) to evaluate the KM capabilities. They adopted the framework of Gold et al. (2001). However, they examined the framework using fuzzy linguistic methods. The only difference between Fan et al. (2009) and Gold et al. (2001) is that knowledge protection is used as knowledge security. The findings of the study show that KM capabilities elements are essential for any KM initiation in organizations. Tseng (2014) investigated the KM capabilities and its relationship with suppliers and the organizational performance where only processes were used in the study. Knowledge protection and knowledge conversion were the elements of KM capabilities. The findings show that both knowledge protection and knowledge conversion have a significant direct effect on organizational performance.

Competitiveness of organizations is linked to KM capabilities elements by Liu et al. (2004) who conducted a study in Taiwanese industries. The KM capabilities elements are knowledge obtaining, knowledge refinement, knowledge storing, and knowledge sharing as the process capability elements. While the other elements include enterprise status which consists of enterprise characteristic, enterprise scale, and technology advantage. The result indicates that knowledge refinement, knowledge storing, knowledge obtaining and knowledge sharing significantly affect the competitiveness of the Taiwanese industries.

Chuang (2004) focused on the knowledge management infrastructure capabilities and conducted a quantitative study to find their effects on the competitive advantages of companies in Taiwan. The elements that were included in this study were cultural resources, technical resources, structural resources, and human resources. The results indicated that the four elements are essential for a competitive advantage and they have a significant effect on competitive advantage of the companies.

A quantitative study was conducted by Chang and Chuang (2011) to investigate the influence of KM capabilities infrastructure and business strategy on knowledge processes. Knowledge-based culture, structure, technology and human resources are the elements of KM capabilities infrastructure. The second construct is knowledge process capabilities and it consists of knowledge choice, knowledge access, knowledge storage, and knowledge sharing. The empirical findings of the study show that both business strategy and infrastructure capabilities have a strong association and relationships with knowledge process capabilities. In addition, the findings show that knowledge process capabilities significantly affect the firms' performance.

Ju et al. (2006) investigated the inter-relationships among KM strategy, KM capabilities, knowledge characteristic, innovation, knowledge integration and organizational learning. The authors intended to develop a comprehensive framework that would show the effect of these factors on each other and ultimately on innovation. The elements of knowledge process capabilities that were used in the study were knowledge acquisition,

knowledge conversion, and knowledge application. The findings indicated that these elements have significant effects on the innovations of the companies.

A different approach from other researchers is found in the study of Cepeda and Vera (2007) who investigated the relationship between dynamic capabilities and operational capabilities of KM. Data of the study was collected from 107 Spanish firms. Knowledge capabilities were divided into designed knowledge configuration, which includes mission and value proposition, and knowledge management infrastructure which includes people, processes, and technology. The results of the study showed that mission and value proposition influence the desired knowledge configuration. This in turn influences operational capabilities. In addition, knowledge infrastructure also influences the operational capability.

Miranda et al. (2011) conducted a study on KM capabilities. Knowledge capabilities were divided into two constructs. The first was accumulation of knowledge stocks with three elements namely human resource, technology infrastructure, and strategic templates, and the second construct was regulation of knowledge flows, with three elements: institutionalization, internal learning processes, and external learning processes.

Chen and Fong (2012) investigated the effect of KM capabilities on the organizational performance. They pointed out that KM capabilities can be divided into knowledge processes and knowledge governance mechanisms. Knowledge processes included responsiveness to knowledge, knowledge dissemination, knowledge acquisitions, and knowledge utilization. The latter included organizational and technological mechanisms. The findings of the study indicated that the elements of KM capabilities have a strong effect on the organizational performance of the companies.

Colakaglu et al. (2014) studied the knowledge creation capabilities of a multinational enterprise. Knowledge creation capabilities were divided into subsidiary knowledge with three elements; namely human capital, internal social capital, and internal organizational capital. While Subsidiary knowledge inflows consisted of global knowledge flows and local knowledge flows, the findings showed that organizational capital was the most significant variable. Local knowledge inflows were also found to influence knowledge creation capabilities.

The process of building knowledge is something that was investigated by Nieves and Haller (2014) who investigated the hotel sector. The findings of the study indicated that the process of building knowledge includes the prior knowledge and skills at the individual and collective level, form the basis for developing dynamic capabilities in firms in the hotel sector.

Alaarj et al. (2015) investigated the effect of KM capabilities on the organizational performance of publicly listed companies in Malaysia. The elements were knowledge acquisition, knowledge sharing, and knowledge utilization. Other elements were culture, structure, technology, and trust as a mediator. The findings showed that knowledge sharing is the most important factor and trust could facilitate the knowledge process and infrastructure capability.

Nielsen (2006) conducted a literature review study to investigate the dynamic capabilities of KM. The review showed that knowledge dynamic capabilities are knowledge development, combination, and knowledge use. Similarly, Aujirapongpan et al. (2010) conducted a literature review study to investigate the KM effectiveness. The results of the study indicated that KM capabilities has two aspects for KM effectiveness. The first is the aspect of a resource based view which includes organizational culture, organizational structure, and technology infrastructure. The latter is related to the knowledge based perspective which includes expertise, learning, and information.

Table 1 shows a literature survey of the elements of KM capabilities. The table shows the authors and the year of publication along with the description of the study and the elements of KM capabilities.

Table 1: Summary of Literature Survey

Author (s) / year	Country	Description	Type of capabilities	Methodology	Element of KM capabilities	Result
Gold et al. (2001)	US	KM capabilities on organizational performance (OP)	Process and Infrastructure	Questionnaire	Acquisition, conversion, application, and technology protection, infrastructure, structure, and culture.	Process is more important
Chuang (2004)	Taiwan	KM capabilities and competitive advantages.	Infrastructure	Questionnaire	Technological resources, structural, cultural and human resources.	Structure, culture and human are important factors.
Liu et al. (2004)	Taiwan	KM capabilities and the industries' competitiveness.	Process	Questionnaire	Knowledge obtaining, knowledge refining, knowledge sharing, and knowledge storing.	Sharing knowledge is the most important.
Nielsen (2006)	N/A	dynamic knowledge capabilities	Process	Literature review	Development of knowledge, knowledge combination, and knowledge use	These elements are the effective factors of KM.
Freeze and Kulkarni (2007)	US	KM capabilities and knowledge assets	Process	Questionnaire	Expertise, lessons learned, policies and procedures, data and knowledge documents	All elements are important.
Fan et al. (2009)	China	Evaluation of KM capabilities using fuzzy logic approach	Process and Infrastructure	Questionnaire	Acquisition, application, conversion and knowledge security, culture, structure, and technology.	Process is more important
Chang and Chuang (2011)	Taiwan	KM capabilities and business strategy	Process and Infrastructure	Questionnaire	Culture, structure, human resources and technology, knowledge access, knowledge choice, knowledge storage, and knowledge sharing.	Process is more important
Tseng (2014)	Taiwan	KM capabilities and suppliers relationship on OP	Process	Questionnaire	Protection and knowledge conversion.	Has a mediating role
Alaarj et al. (2015)	Malaysia	Effect of KM capabilities on organizational performance	Process and Infrastructure	Questionnaire	Acquisition, sharing, and utilizations, organizational culture, structure, and technology infrastructure.	Process is more important. Sharing is the most important.

3. Methodology

This study reviewed the articles related to the KM effectiveness, KM capabilities, and the effect of KM or KM capabilities on the organizational measures such as competitiveness, performance, and innovation. The search engine and the database of Science Direct, Emerald is used in this study. A key terms such as KM capabilities, KM effectiveness, KM factors, KM and organizational performance, and a combination of these terms are used to identify the related articles. The search resulted in 41 articles. After screening the articles, 26 articles have been excluded due to the fact that they are technical articles (e.g. Ismail & Ahmad, 2012; Al-Omari et al., 2014). Thus, the fifteen remaining articles are reviewed and analyzed. The time period of the studies ranges from 2001 to 2015. A quantitative analysis is used to identify the status quo of the studies in the field of KM capabilities.

4. Findings and Discussion

The review of this study is based on the findings of fifteen (15) articles that investigate the effect of KM

capabilities on different organizational performance measures. An analysis of the articles is carried out to identify the effect of the variables on the organizational measures. Findings are as follows:

4.1 Process vs. Infrastructure

The articles in review which consider both capabilities account to 44%. While the remaining 56% consider either process (44%) or infrastructure (12%). Previous studies showed that processes are more important than infrastructure. Empirical findings that compares the effect of both variables have shown that processes such as knowledge sharing, knowledge application, knowledge utilization, and knowledge protection have a more important role in enhancing the knowledge capabilities of organizations which leads to better organizational performance in terms of competitive advantage, innovation, business strategy, and competitiveness. The most important variable is knowledge sharing. Many previous studies have shown that sharing the knowledge reduces the operational cost and increases the competence of the organizational members which leads to better overall performance.

4.2 Elements of KM capabilities

The elements of KM capabilities are varied based on the researchers' context and the scope of their studies. Most of the researchers have followed the approach of Gold et al. (2001) and divided the components of processes and infrastructure. In terms of processes, the four components are knowledge creation, knowledge sharing, knowledge application, and knowledge protection. Some minor changes to the elements have been seen such as changing the protection to security, or creation to acquisition, and dissemination to sharing. This is mainly due to the theoretical background that has been used by the researchers where those who build their framework based on a KM based view has employed elements such as acquisition, conversion, application, and protection (Gold et al., 2001; Fan et al., 2009) while those who build their approach on the resources based view has altered the framework to include elements such as knowledge development, combination, expertise, and lessons learned (Freeze & Kulkarni, 2007). The difference in the elements come from the fact that those who use the resource based view consider the element to be internal while those who use the knowledge based view consider the elements of capabilities to come from both: internal and external sources.

4.3 Type of Studies and Sample

The majority of the previous studies conducted were using a quantitative approach. A Questionnaire was the instrument of use for the majority of the studies (88%) while only 12% have used a literature review instrument to develop a conceptual model. In terms of the sample, all the previous studies were conducted in business organizations with samples ranging between managers of companies in an executive level to postgraduate level employees. This is because studies in KM requires the knowledge and strategic level understanding of employees who understand and are aware of the KM practices (Gold et al., 2001)

4.4 Location of studies

Previous studies were conducted mainly in Taiwan (44%) followed by US (24%), China (12%), Malaysia (12%) and 12% being general literature reviews. It can also be seen that studies in Taiwan outperform the studies in other countries and there is need for more studies in other countries. Further, it can be seen that all the studies are conducted in a single country and none of the previous studies have used data from two countries i.e. studies are based on country perspectives, international studies are few.

5. Conclusion, Limitation, and Future work

The purpose of this study is to review and integrate the literature to come up with the factors that affect the KM effectiveness. A total of fifteen articles were reviewed. The findings indicate that knowledge process capabilities such as knowledge acquisition, knowledge sharing, knowledge application, and knowledge protection are more important than the knowledge infrastructure capabilities. In addition, knowledge sharing is the most important element of KM capabilities. The findings also show that the majority of studies were conducted in business organizations using a quantitative approach. The respondents were managers and postgraduate level employees. It is worth mentioning that one of the limitations of this study is the number of reviewed articles. Fifteen articles were reviewed which is considered relatively small. However, some other studies that have reviewed the literature have also included similar numbers.

As a way forward, researchers are recommended to do more empirical studies in different developed and developing countries. For example, more studies in Malaysia could enrich the literature in KM effectiveness. Another suggestion for future researchers is to investigate the KM capabilities at the operational employee level. This is because employees are the storage of knowledge in an organization and they are more affected by knowledge management practices. Researchers are also advised to alter the scope to include educational institutions such as universities or non-for-profit organizations to see how KM practices could affect the

performance of these organizations. Lastly, future research is recommended to focus on the approach of conducting KM studies. An interview approach or a focus group approach can help an organization to discover a new dimension of KM practices such as the role of religion and the national culture.

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