



AENSI Journals

Australian Journal of Basic and Applied Sciences

ISSN: 1991-8178

Journal home page: www.ajbasweb.com



Achieving Business Competitiveness from Knowledge Management (KM) Perspectives in Malaysia

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ARTICLE INFO

Article history:

Received 25 January 2014

Received in revised form 12

March 2014

Accepted 14 April 2014

Available online 25 April 2014

Keywords:

Knowledge management (KM),
Information infrastructure capability
(IIC) and Business competitiveness.

ABSTRACT

Practitioners and researchers have witnessed knowledge management (KM) as critical capability for achieving business competitiveness. However, attention was mostly paid to single perspective; either on KM process, information technology (IT) applications or information infrastructure capability (IIC) independently. Rare research was looking on all KM-related perspectives. Thus, in this paper, relationships on KM process, IT applications and IIC toward business competitiveness were examined. This paper proposes a conceptual framework in a view of flow, showing the relationships in three phases with connected direction: (1) input, (2) process and (3) output. Having IIC is firstly perceived as “input”; performing KM processes is perceived as “process” in the middle phase and achieving “organisational competitive advantage” is observed as output at last. This study also interprets that capability of performing KM processes can result in improving business competitiveness. The findings suggest inter-related relationships of knowledge, KM and IIC. The IIC, KM process and organisational competitive advantage were perceived as an “input”, “process” and “output”. This would lead to a better understanding of the relationships between IIC and organisational competitive advantage in the view of flow with connected directions.

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To Cite This Article: Lew Sook-Ling and Yuen Yee-Yen., Achieving Business Competitiveness from Knowledge Management (KM) Perspectives in Malaysia. *Aust. J. Basic & Appl. Sci.*, 8(5): 240-247, 2014

INTRODUCTION

Knowledge management (KM) practitioners and researchers are consistently searching for better ways to improve business competitiveness. Although past research has described the positive impacts of information infrastructure capability (IIC) components on business competitiveness (Chang and Chuang, 2011, Jee-Hae *et al.*, 2012, Mushref and Ahmad, 2011, Qi *et al.*, 2008, Schwager *et al.*, 2000, Tallon, 2008, Wang *et al.*, 2007), none of them actually bridged knowledge, KM, information technology (IT) applications and IIC components to business competitiveness. Furthermore, none of the publications discussed the impacts of IIC on business competitiveness from the KM process context, which will be presented in this paper.

The following section first presents the research gaps and followed by discussions of the definitions of knowledge, KM, KM process, IIC and competitive advantage based on the review of literature that has garnered impressive theoretical and practical support. The research issues of existing studies are also highlighted. A theoretical framework is then formulated to depict the relationships between the key constructs. Recommendations for Malaysian KM practitioners are then provided before concluding this paper.

Literature Review:

The literature on knowledge management (KM) and information technology (IT) applications is growing. A recent online search of databases found that there were only less than ten business competitiveness-related publications from Malaysia. Even though studies have been conducted in the Asian countries (Bawany, 2004, Chang and Chuang, 2011, Kim, 2001, Ngai and Chan, 2005, Nonaka, 1994, Sher and Lee, 2004), none of the publications relate IIC to business competitiveness. Moreover, the research findings of Asian countries cannot be generalised to Malaysian context due to differences in cultures and business customs.

Malaysia, being palm oil, natural gas, electronic parts and electrical appliances leading exporters, practicing a highly open economy with full government supports (WorldBank, 2012) only ranked 21st in the position of the Global Competitiveness Index (GCI) 2011-2012, which places her among the world's most developed

countries, behind Singapore (world 2nd) and Hong Kong (world 11th) (Sala-I-Martin *et al.*, 2011). Although there are past researches (Aziz and Poorsartep, 2009, Jarman and Chopra, 2008, Kanapathy and Khan, 2012) on electronic-business and policy of MSC Malaysia companies, none of them are investigating the business competitiveness of Malaysian companies.

Being a fast developing country, Malaysia needs a new level of workforce who can work effectively across national and cultural boundaries in order to achieve national competitive advantage. Multimedia Super Corridor in Malaysia (MSC Malaysia) project was launched in 1996. The project was modelled after Silicon Valley, which would offer the best of first-world infrastructure, at developing-nation costs (MDeC, No date). This also serves as a prominent government plan to help Malaysia leapfrog into developed nation by 2020, in tandem with the nation's Economic Transformation Programme (ETP) and Vision 2020 (Malaysia Economic Transformation Programme, 2012).

MSC Malaysia have contributed RM9.6 billion to Gross Domestic Product (GDP) in 2011, 69.2 % growth over 2010 (Malaysia MDeC, 2011). Being the prime mover of Malaysian economy and facing competitiveness globally, investigations and studies on the right input and process are essential to be carried for greater benefit to MSC Malaysia companies in achieving business competitiveness. Although there are Asian Studies on capability and KM from Japan (Nonaka, 1994), Korea (Kim, 2001), Taiwan (Chang and Chuang, 2011) and Hong Kong (Ngai and Chan, 2005), they cannot be generalised to Malaysian context due to differences in economies, cultures and business customs. The list of research gap is presented in Table 1.

Table 1: Research Gaps.

Descriptions	Sources
None of the research bridged IIC components to business competitiveness and none of the research viewed IIC from KM process context in achieving business competitiveness.	Chang & Chuang, 2011; Jee-Hae, Stratopoulos, & Wirjanto, 2012; Tallon, 2008; Qi, Lan, & Guo, 2008; Schwager, Byrd, & Turner, 2000; Wang, Klein, & Jiang, 2007.
Limited numbers of KM studies and its underlying IT components in Malaysia.	Bawany, 2004; Chong, 2005
Although there were studies done in Asian countries such as	
<ul style="list-style-type: none"> • Japan, • Korea, • Singapore, • Taiwan and • Hong Kong. 	<ul style="list-style-type: none"> Nonaka, 1994 Kim, 2001 Bawany, 2004 Chang & Chuang, 2011 and Sher & Lee, 2004, Ngai & Chan, 2005
They also may not be generalised to Malaysian context due to economy, cultural and business differences.	

Since a complete measurement of business competitiveness from KM and IIC perspective was also not demonstrated in any past researches, this paper is fortunate to fill the research gaps.

Theoretical Foundation:

A. Proposition 1: Knowledge as "Pre-condition":

Defining knowledge is difficult because it is a multi-sided concept with multi-level meanings. The research for the meanings of knowledge began since the classical Greek period. Plato (427-347BC) and Aristotle (384-322BC) had tried to define what knowledge was (Benbya *et al.*, 2004, Nonaka, 1994). However, the definitions by these philosophers dating thousands of years ago were somewhat inappropriate and not applicable for modern societies. Hence, a contemporary working definition of knowledge is necessary for this paper. A variety of concepts from a variety of viewpoints and standpoints of knowledge have been suggested since then. The following definitions are two examples of the multilevel meanings on knowledge:

Frances Bacon, 1561-1626: "Knowledge, which is power, knows no obstacles: neither in the enslavement of men nor in compliance with the world's rulers." (Rees, 2002)

Davenport and Prusak (2000) proposed a more comprehensive meaning of knowledge. Knowledge is viewed as a fluid mix of new and existing processed resources which are originated from and applied to an organisation that gives understanding and experience.

It can be seen that there are mainly two dominant perspectives, namely from an IT perspective and from a strategic management perspective. From the IT perspective, the meaning of knowledge is always puzzled between information and data (Ngai and Chan, 2005, Tiwana, 2002). Hence, there is a need to distinguish information, data and knowledge in order to understand the actual meaning of knowledge. Knowledge is neither data nor information but it is based on data and information (Yaghoubi *et al.*, 2011).

Data represents raw facts that are saved, stored and recorded without meaning. Data must be stored, grouped, analysed, processed and summarised to have meaning. When data, in a meaningful context, after they

are processed and organised, they become information. Information is often in the form of message. Meaningful information produces value to its receiver (Benbya *et al.*, 2004). Hence, knowledge consists of organised and processed data and information to give understanding, experience and expertise in a specific context (Davenport and Prusak, 2000).

From the strategic management *perspective*, a capability or a process is involved. Knowledge is defined as “an object to be stored and utilised as object and process of simultaneously knowing and acting through experience, communication and inference”. Knowledge is summarised as a “capability to act effectively” which is seen as a justified personal belief that increases an individual’s capability to take effective action is equivalent to applying expertise (Zack, 1999-b).

Two types of knowledge were suggested by prior researches, tacit or explicit knowledge (Alavi and Leidner, 2001, Anand *et al.*, 2010, Venkitachalam and Busch, 2012). Tacit knowledge refers to the knowledge that is highly personal and difficult to formalise. In contrast, explicit knowledge refers to the knowledge that is formal and systemic. It can be easily transmitted and shared with other individuals. The tacit and explicit knowledge are both crucial to the organisation and must be generated and disseminated for others to achieve competitive advantage (Abdel-Aziz and Kamel, 2012).

Besides, knowledge can be conceived multi-level, from individual up to the group and organisation levels. Organisational knowledge is created through combination, internalisation, socialisation and externalisation cycles that convert knowledge modes between tacit and explicit. In view of this dynamic process of multilevel knowledge creation between individuals and groups, the individuals and groups have their own way of knowledge mode conversion within the community. Therefore, communicating, sharing, resolving and combining are essential to support similarity and disputes from the multiple communities (Hahn and Subramani, 2000, Yaghoubi *et al.*, 2011). Hence, it is important to have appropriate knowledge defined in different contexts in order to manage organisational knowledge properly.

Based on the exploration of various perspectives of knowledge from past studies, it is certain that knowledge is a “pre-condition” that gives understanding, experience and expertise to organisation. Hence, in the context of this paper, a pragmatist definition of knowledge as “pre-condition” is taken:

“Knowledge is defined as processed (Alavi and Leidner, 2001, Benbya et al., 2004, Davenport and Prusak, 2000, Zack, 1999-b) and organised resource that gives understanding, experience (Davenport and Prusak, 2000) and expertise efficiently and effectively (Zack, 1999-b) to an organisation (Davenport and Prusak, 2000, Hahn and Subramani, 2000)”

B. Proposition 2: KM Process as “Process”:

It is widely accepted that knowledge is a pre-condition for the development of management (KM) and information infrastructure capability (IIC) (Bharadwaj, 2000, Bloodgood and Salisbury, 2001, Kim, 2001, Ngai and Chan, 2005, Sher and Lee, 2004, Tanriverdi, 2001, Zack, 1999-a). However, there are different perceptions on KM based on the different views of knowledge (Alavi and Leidner, 2001, Benbya *et al.*, 2004, Davenport and Prusak, 2000, Ngai and Chan, 2005, Tiwana, 2002, Zack, 1999-a).

If knowledge is viewed with information access, then KM should focus on building and managing knowledge database. However, if knowledge is viewed as a process, then the KM focus should be on knowledge processes. Furthermore, if knowledge is viewed as a capability, KM should be focused on building core capability, understanding the way of achieving competitive advantage, and producing intellectual capital. The major implication of these various conceptions of knowledge is that each perspective suggests a different tactic for managing the knowledge which implied a different perspective of the role of KM.

The processed-based and capability definitions of knowledge tie in very neatly in the context of this paper as it relates to KM processes and IIC. KM is seen as broad, multi-dimensional and covers most aspects of business processes (Alavi and Leidner, 2001, Wiig, 1997). The business processes make up a complete KM life cycle (Benbya *et al.*, 2004). KM life cycle is an iterative sequence of KM activities (Benbya *et al.*, 2004, West and Hess, 2002). Building upon this notion, KM process from different KM life cycle frameworks were reviewed and found that KM processes are creating (Abdel-Aziz and Kamel, 2012, Nevo *et al.*, 2008, Ngai and Chan, 2005, Rajiv and Sanjiv, 2005, Wang *et al.*, 2007), storing (Ngai and Chan, 2005, Wang *et al.*, 2007), sharing (Abdel-Aziz and Kamel, 2012, Ali and Freyedon, 2011, Rajiv and Sanjiv, 2005, Wang *et al.*, 2007, Yaghoubi *et al.*, 2011) and utilising knowledge (Rajiv and Sanjiv, 2005, Wang *et al.*, 2007). In this paper, creating, storing, sharing and utilizing knowledge are adopted to represent the “process” to achieve organisational competitive advantage.

C. Proposition 3: Information Infrastructure Capability (IIC) as “Input”:

Knowledge acts as a pre-condition for knowledge management (KM), KM processes and information infrastructure capability (IIC). In turn, KM processes and IIC are supported by IT applications (Benbya *et al.*, 2004, Rajiv and Sanjiv, 2005, Tanriverdi, 2005). Sher and Lee (2004) proved that IT applications often resulted in greater IIC. Business competitiveness resulting from the development and utilisation of IT applications was

investigated (Bhatt *et al.*, 2010, Chang and Chuang, 2011, Jee-Hae *et al.*, 2012, Qi *et al.*, 2008, Tallon, 2008) and the primary finding showed that organisations that possessed IIC often enjoyed business competitiveness.

A variety of IIC were proven to have implications in achieving business competitiveness from past research. With this, IIC is considered as a group of components, namely dynamic capability (Rajiv and Sanjiv, 2005, Tallon, 2008, Wang *et al.*, 2007), integrating capability (Benbya *et al.*, 2004, Christopher, 2006, Sher and Lee, 2004), data management capability (Alavi and Leidner, 2001, Ngai and Chan, 2005, Zack, 1999-a), security capability (Bloodgood and Salisbury, 2001, Hall, 2011, Meso and Smith, 2000, Sher and Lee, 2004), utility capability (Hahn and Subramani, 2000, Kim, 2001, Ngai and Chan, 2005) and collaborating capability (Alavi and Leidner, 2001, Christopher, 2006, Meso and Smith, 2000).

One capability can co-exist and enhance other capability. For instance, individual social networks and corporate memories enhanced collaborating capability among organisational units to support collaborating and dynamic capabilities for speedy decision. Workflow automation systems enhanced speedy integrating and data management capability (Alavi and Leidner, 2001). Furthermore, corporate portal enabled integrating capability and collaborating capabilities from combining different departments and databases (Benbya *et al.*, 2004). Document management tools which contributed data management capability found to be enhanced by dynamic capabilities. Communication and coordination tools that enhanced collaborating capability also induced dynamic capability among organisational participants (Sher and Lee, 2004). Therefore, in this paper, IIC is considered as the “input” for knowledge-and-technology-based organisations in achieving organisational competitive advantage (Fig. 1). Each component of the IIC is distinct but they greatly facilitate, reinforce and interconnect with each other.

D. Proposition 4: Competitiveness as “Output”:

Knowledge management (KM) can affect organisational competitive advantage either directly or indirectly (Becerra-Fernandez *et al.*, 2004). Direct impacts include profits or costs that can be linked to organisational vision and strategy explicitly. Indirect impacts are explicated by processes. These processes are not associated with transactions, organisational vision and strategy. Examples of indirect impacts are sustainable business competitiveness, economies of scale and scope search (Becerra-Fernandez *et al.*, 2004).

Management researchers have been exploring the concept of competitive advantage. The major focus of the scholars from 1900s was on organisational “differentiation” (Coyne, 1986, Day and Wensley, 1988, Porter, 1985) as basis. The “differentiation” focuses the concepts of differential advantage as a source of competitive advantage.

Later, in 2000s, the “resource-based view” takes precedence (Bharadwaj, 2000, Foss and Knudsen, 2000, Peteraf and Barney, 2003). The “resource-based view” advocates resources must have value, rarity and be inimitable among rivals. Recently, the research direction has centred in infrastructure capabilities as source of competitive advantage in their studies (Bhatt *et al.*, 2010, Chang and Chuang, 2011, Jee-Hae *et al.*, 2012). To take a closer look at the key concepts of 1900s, early 2000s and recent studies, they could be quite similar and complement each other in relation to the differentiation of organisational resources as sources of competitive advantage.

There are three definitions of business competitiveness which are closely related to this paper and they are listed below:

“Competitiveness is defined as the ability to produce a superior product and/or bring the product to market at a lower price than most, or all, of their competitors and thus attain a position of relative advantage, the challenge is to sustain any advantage once achieved.” (Porter, 1985)

“Core capabilities constitute a competitiveness for a firm; they have been built up over time and cannot be easily imitated.” (Leonard-Barton, 1995)

“Competitiveness is gained by exploiting a unique blend of activities, assets, attributes, market conditions and relationships that differentiates an organisation from its rivals. These may include: access to natural resources, specific location, or skilled workforce.” (Prior, 2006)

Porter (1985) defines business competitiveness is the ability to attain a differentiation position of relative advantage. This concept was later scrutinised by Leonard-Barton (1995) who describes core capabilities from competitive advantage. Prior (2006) suggests competitive advantage is gained by exploiting a unique blend of “processes” and access to “resources”. The concepts mainly focused on core capabilities and resources as sources which are explicated by unique blend of processes to maintain and improve its competitive position in the market. Therefore, KM processes in this paper are considered as the “process” and information infrastructure capability (IIC) is considered as the “input” to activate the KM processes for an organisation to attain a differentiation position among competitors – as “output”.

Since knowledge is operationalised as a processed resource and capability (Alavi and Leidner, 2001, Benbya *et al.*, 2004, Davenport and Prusak, 2000), the key element of IIC for an organisation is performing their KM processes - creating, storing, sharing and utilising knowledge. Hence, in this context of paper, to obtain organisational competitive advantage, the IT applications used in an organisation are based on its IIC to obtain

organisational competitive advantage. Based on this notation and the previous definitions (Leonard-Barton, 1995, Porter, 1985, Prior, 2006), this paper defines competitiveness as:

“The capability (Leonard-Barton, 1995, Porter, 1985) of creating, storing, sharing and utilising knowledge (Prior, 2006) using dynamic capability, integrating capability, data management capability, security capability, utility capability and collaborating capability.”

Relationships Among Key Constructs:

Information infrastructure capability (IIC) is hypothesized directly impacts organisational competitive advantage and knowledge and IT applications are positively related to IIC as shown in Fig. 1.

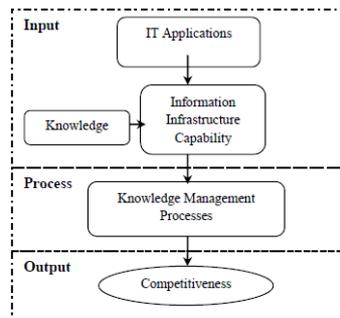


Fig. 1: Proposed Framework.

As presented in Fig. 1, the proposed framework is in a flow of three main phases: (1) input, (2) process and (3) output. IT applications and knowledge are simultaneously the pre-conditions of IIC, in which IIC acts as the “input” in the flow. To activate the “process”, knowledge management (KM) processes requires “Input” from IIC. In the centre of the flow, KM process is hypothesized as the “process” placed between the IIC and business competitiveness. At the end, capability of performing KM process is operationalised as “output” of the flow for achieving business competitiveness. A summary of these key constructs is presented in Table 2.

Table 2: Terms and Definitions.

Term	Definition
Knowledge	Processed and organised resource that gives understanding, experience and expertise efficiently and effectively to an organisation.
Knowledge Management (KM)	The management of creating, storing, sharing and utilising organisation's knowledge that gives understanding, experience and expertise efficiently and effectively to achieve organisational goals.
KM Process	Creating, storing, sharing and utilising knowledge.
Information Infrastructure Capability (IIC)	IIC is considered as a group of components, namely dynamic capability, integrating capability, data management capability, security capability, utility capability and collaborating capability. Each capability of the IIC is distinct. But they are highly interrelated, facilitate and reinforce each other.
Business Competitiveness	The capability of creating, storing, sharing and utilising knowledge using dynamic capability, integrating capability, data management capability, security capability, utility capability and collaborating capability.

Discussion:

Past research only determined if knowledge, knowledge management (KM) process, information infrastructure capability (IIC) components had positive impact on business competitiveness without finding how knowledge, KM and IIC interact in contributing to business competitiveness, specifically no research looked at IIC from the perspective of KM processes. Thus, it is difficult for knowledge practitioners to plan their IT applications to obtain IIC effectively for business competitiveness. Therefore seeking clear view of key constructs and paying attention to their relationships are crucial in determining the proposed framework which has been carried out in this paper.

Based on the research findings, there are several implications for the theory about knowledge, KM process, IIC and organisational competitive advantage. This paper provides new insights into three ways. *Firstly*, this paper implies achieving business competitiveness requires “pre-condition”, “input” and “process”. These implications have opened a new research avenue for further exploration especially to empirically test the proposed framework which is not carried out by this paper.

Secondly, this proposed framework appears to provide the first investigation in Malaysia about the relationships between IIC and organisational competitive advantage. Future research and investigation on KM and business competitiveness of MSC Malaysia companies are crucial since they are the forerunner to pioneer the implementation of effective information infrastructure. Furthermore, such findings of research would also offer guidelines to organisations in other industries on key IT applications necessary for organisational competitive advantage.

Thirdly, the types of IT applications that are needed to effectively lead to future business competitiveness are also to be identified as “pre-condition” to have IIC as “input”.

Conclusion:

This paper is probably the first that attempts to investigate the relationships between information infrastructure capability (IIC) and organisational competitive advantage in the knowledge management (KM) perspective, particularly in Malaysia. A set of clear definitions of the key constructs in knowledge management (KM) field was developed. The inter-related relationships were also presented in an “input”, “process” and “output” flow of direction. This would lead to a better understanding of the relationships between IIC and organisational competitive advantage in the view of flow with connected directions.

ACKNOWLEDGEMENT

The authors are grateful to the Research Management Centre of Multimedia University, Malaysia for providing the facilities to carry out the research.

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