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# The Influence of Knowledge Management on Market-Related Performance through Business Process Effectiveness: An Empirical Investigation of Hospitals and Financial Firms

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## Abstract

*Knowledge-based resources are critical in service sectors for facing the challenges of dynamic markets and helping organizations manage changes in consumer preference. Knowledge application is needed to improve the business process in order to attain superior market-related performance because there is the unperfected imitation coming from causal ambiguity. However, there is a lack of empirical study in examining the effect of KM and the effect of the business process within the scope of service sectors. This study examines how KM infrastructure supports and KM capabilities influence market-related performance through business processes effectiveness. Data collections of two studies are from 166 hospitals and 106 financial firms. The findings indicate a positive relationship between KM infrastructure and KM capability, and that they have a positive influence on market-related performance through business process effectiveness. For improving this process, the effect of KM infrastructure is greater than the effect of KM capabilities in hospitals. But the effect of KM capabilities is greater than the effect of KM infrastructure in financial firms. The implications of these findings for research and practices in hospitals and financial firms are also discussed.*

*Keywords: Knowledge Management Infrastructure, Knowledge Management Capabilities, Knowledge-Based View, Market-Related Performance.*

# 1 INTRODUCTION

The service sector, in comparison with the manufacturing sector has distinct functions which include high-level activities involving direct human interaction and superior analytical capabilities, such as medical care, investment banking, and insurance service (Biema and Greenwald, 1997). The characteristics of service in the service sector are not readily expandable in the short run neither inventoried, particularly in the hospitals and commercial banks (Abernathy et al., 1973). These organizations are considered as professional service-oriented and knowledge-intensity firms (von Nordenflycht, 2010). Knowledge-based resources are critical in these organizations for helping them to manage changes in consumer preferences. There is a lack of research in examining the effect of knowledge management (KM) in the sphere of professional service firms. These firms are investing heavily in KM systems, and KM is a key factor for success in their business (Ofek and Sarvary, 2001). Previous research has identified that the most important knowledge domain for firms is knowledge concerning customer service (Alavi and Leidner, 1999). Furthermore, the comparing of different professional services firms is also needed (von Nordenflycht, 2010). The present study selected hospitals and financial firms as sampling frames for understanding the effect of KM on market-related performance.

The knowledge-based view (KBV) provides insights regarding the effectiveness of high levels of association and integration between heterogeneous members (Richard et al., 2007). The association and integration of knowledge among these members is based on some mechanisms for incentives to KM-related activities. The mechanisms of effective KM have been surveyed in prior research. They include culture, structure, people, and information technology (IT) (Lee and Choi, 2003). In addition to IT, organizational culture and structure are also important supports for developing KM infrastructure (Gold et al., 2001). The infrastructure supports organizations for managing knowledge resources and turning them into organizational assets and capabilities. The mechanisms for integrating such specialized knowledge include rules and directives, sequencing, routines, also group problem solving and decision making (Grant, 1996b). These concepts are similar to the business process which has been defined as a "specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs: a structure for action" (Davenport, 1993, p. 5). The transformation value of knowledge is achieved through actual action and integration of applied knowledge (Demarest, 1997). KM is also the set of business processes that captures and provides access to collective experience in professional service firms (Ofek and Sarvary, 2001). Thus, the present paper proposes the positive mediating effect of the business process on the relationship between KM and market-related performance.

## 2 CONCEPTUAL BACKGROUND

### 2.1 The Nature of the Service Sector and Market-Related Performance

The service-based industry compared with the product-based industry is dependent not only on physical products, but the service that accompanies the product and the processes of marketing the product (Kankanhalli et al., 2003). The service-based industry is responsible for production delivery service to customers, customer service and transaction processing (Biema and Greenwald, 1997). Medical and financial services are not usually transportable (Biema and Greenwald, 1997), thus, competition in service-based industries depends mainly on the services offered directly (Kankanhalli et al., 2003). It is particularly important for these services to have the ability to interact and maintain positive customer relations. Since knowledge assets in the service-based firms come from their knowledge base, they continually need to be nurtured and developed (Decarolis and Deeds, 1999). Process analysis is a useful tool because it brings to light ways in which service workers can interact with customers (Biema and Greenwald, 1997). To overview the aggregated KM value, the market-related performance under the process-based value chain is a useful measurement.

## 2.2 The Knowledge-Based View

Resource management refers to the capability of an organization to perform a coordinated set of tasks and to utilize organizational resources, for the purpose of achieving a particular target (Helfat and Peteraf, 2003). The most valuable resource is knowledge, which is based on the concept of the knowledge-based view (KBV) (Grant, 1996a, 1996b; Kogut and Zander, 1992; Spender, 1996). This study applies KBV, which proposes that the main determinants of superior performance are from heterogeneous knowledge bases and capabilities (DeCarolis & Deeds, 1999), knowledge application (Grant, 1996b), and knowledge deployment and use (Teece, 1998). Further, Spender (1996, pp. 47) referred to different concepts of KBV in “which organizations are enduring alliances between independent knowledge-creating entities, and tangible resources which are subordinated to the services they provide”. The KBV of firms suggests that knowledge is viewed as residing in individuals, and the primary role of the organization is knowledge application rather than knowledge creation (Grant, 1996b). Since knowledge assets are grounded in the experience and expertise of individuals, the firms also need to provide physical, social, and resource allocation structures to shape the knowledge into competence (Teece, 1998). Therefore, this study proposed that organizational infrastructure support and the development of KM capabilities are important for aiding organizations to apply knowledge in order to gain competitive advantage.

## 2.3 KM Infrastructure and KM Capabilities

According to the concepts of KBV, a firm needs to develop proper structure, incentives, and management knowledge resources (Grant, 1996b). Knowledge residing in firms is seen as information and ‘know-how’ (Kogut and Zander, 1992). The difference between information and ‘know-how’ is that information is easily coded, transmitted, and replicated by technological support (Kogut and Zander, 1992; Zander and Kogut, 1995). ‘Know-how’ requires the organization to provide higher-order principles on how to coordinate the group and how to transfer individual knowledge into social knowledge (Kogut and Zander, 1992). Furthermore, for maximizing social capital the organization should build up IT, structure and culture to develop its KM infrastructure (Gold et al., 2001). The prior research has empirically shown that the important factors assisting KM effectiveness include IT (Alavi and Leidner, 1999; Gold et al., 2001; Lee and Choi, 2003; Tanriverdi, 2005), organizational structure (Gold et al., 2001; Lee and Choi, 2003), and organizational culture (Alavi and Leinder, 2005; Lee and Choi, 2003; Janz and Prasarnphanich, 2003). In sum, this study proposed that KM infrastructure includes KM technological, structural, and cultural support.

In the service sector, there are two broad sources of competitive advantage: unique assets and capabilities (Bharadwaj et al., 1993). In addition, KM infrastructure is important for managing the knowledge resource and the organizational assets (e.g. Teece, 1998). Capabilities (e.g. Grant, 1996a) are critical for achieving a competitive advantage over rivals. KM capabilities refer to the organizational capability of managing knowledge assets. These are considered as the most strategic resources and are separated into product, customer, and managerial KM capability (Tanriverdi, 2005; Tanriverdi and Venkatraman, 2005). They are developed from knowledge creation, transfer, integration, and knowledge leverage (Tanriverdi, 2005; Venkatraman and Tanriverdi, 2004).

## 2.4 Business Process Effectiveness

In the concepts of KBV, integrating specific knowledge is improved by the mechanisms of making rules and directives, sequencing, and routines (Grant, 1996b). The broader the scope of knowledge being integrated within a competence, the more difficult imitation by competitors becomes because of the time compression diseconomies of imitation and causal ambiguity (Dierickx & Cool, 1989).

Routines are important for managing the high costs of communication and consensual decision making (Grant, 1996b). The generic term ‘routines’ include the forms, rules, procedures, conventions, strategies, and technologies around which organizations are constructed and through which they operate (Levitt and March, 1988, pp. 320). Routines can be thought of as business processes which the organization actions to accomplish some business purpose or objective (Ray et al., 2004). The

knowledge domain can be centered on the practice and experience relevant to any business operation or business process (von Krogh et al., 2001).

Business process effectiveness refers to the extent to which the organizational business process involves business value and identified useful resources. Resource-based logic suggests that business processes should exploit valuable and common resources (Ray et al., 2004). According to KBV, business process effectiveness is the way to understand the profits of knowledge application.

### 3 RESEARCH MODEL AND HYPOTHESES

Based on the KBV, firms can be seen as institutions for integrating knowledge (Grant, 1996). KM is important and critical for professional firms in the service sector. The research intends to understand the relationship between KM and market-related performance since market-related performance is important for these firms. The market-related performance includes product and service enhancement, sales and marketing support, and customer relations. This study applies KBV to propose that the positive mediating effect of business process effectiveness is between KM mechanisms and market-related performance in hospitals and financial firms. The figure 1 is the research model.

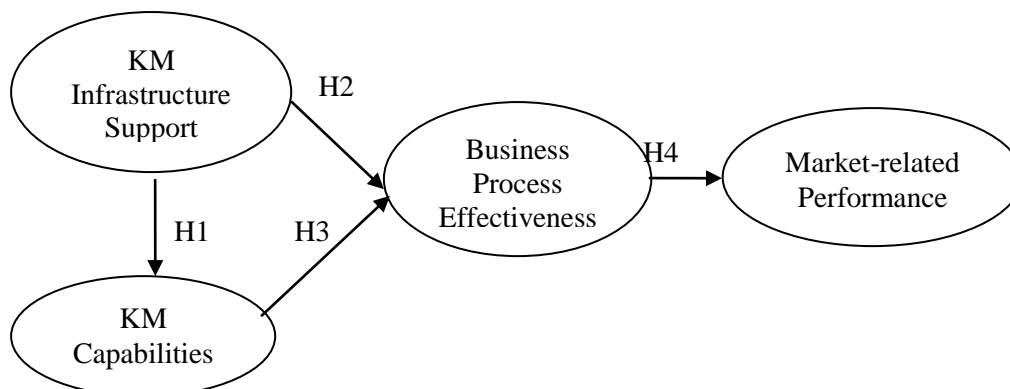


Figure 1. Research Model

#### 3.1 Effects of KM infrastructure Support

The KBV of a firm suggests that they exist to create, share and capitalize on their knowledge (Decarolis and Deeds, 1999). KM infrastructure support refers to the organizational infrastructure that supports and encourages knowledge activities among employees. KM infrastructure support includes KM technological support, structural support, and cultural support. Proper structures, incentives, and management can help firms to generate innovation and build knowledge assets (Teece, 1986). The most strategic knowledge assets of firms are KM capabilities which include product, customer, and managerial capability (Tanriverdi, 2005; Tanriverdi and Venkatraman, 2005). Technological support can assist knowledge codifiability in order to improve combinative capabilities (Kogut and Zander, 1992). Technological support is also an important factor to improve building KM capabilities (Tanriverdi, 2005). Organizational structure and culture can improve accessing and integrating tacit knowledge since the firm is a knowledge integrating institution (Grant, 1996b). Thus, the following hypothesis is proposed:

*H1: KM infrastructure support is positively related to KM capabilities.*

The value of IT can positively support and improve the business process (Mooney et al., 1995; Radhakrishnan et al., 2008; Ray et al., 2005). KM technology supports codifiability, which in turn breaks down communication barriers by reducing the complexity of knowledge (Kogut and Zander,

1992), thus supporting business process effectiveness. Complementary to IT resources, organizational resources are also important for improving the business process (Melville et al., 2004). Organizational resources refer to resources which include: organizational structure, policies and rules, workplace practices, and culture (Melville et al., 2004). Structural and cultural supports streamline processes by providing clear rules and directives according to social knowledge thereby helping business activities. Thus, the following hypothesis is proposed:

*H2: KM infrastructure support is positively related to business process effectiveness.*

### **3.2 Effects of KM Capabilities**

KM capabilities include product, customer, and managerial capability (Tanriverdi, 2005). These three KM capabilities are most strategic being important intangible resources (Tanriverdi and Venkatraman, 2005). They will often be bundled together to enable the execution of a particular business process (Ray et al., 2004).

KM capabilities refer to the organizational capability of managing strategic knowledge for improving 'best practice'. 'Best practice' knowledge is involved in the business process management function (Grover and Davenport, 2001). Better KM capabilities can support better business process management. Furthermore, knowledge itself can not create value, but must flow into actions and then becomes useful and profitable (Demarest, 1997; Droge et al., 2003). In order to realize the full competitive potential of its resources and capabilities, a firm must be able to identify its business processes (Barney and Wright, 1998). Thus, the following hypothesis is proposed:

*H3: KM capabilities are positively related to business process effectiveness.*

### **3.3 Effects of Business Process Effectiveness**

A firm's distinctive resources include organizational processes, which have the casual ambiguity of the difficulty of imitating valuable resources (Barney, 1991). In facing such causal ambiguity, imitating firms cannot understand why some firms have a better competitive advantage (Barney, 1991). Imitation is also difficult because few routines or processes are stand-alone and their interconnectedness may not be clear (Droge et al., 2003). The firm itself may not really know why they can outperform other firms.

Business processes can support resource exploitation and facilitate improvements for upgrading and refining resources, thereby enabling a firm to develop new sources of competitive advantage (Ray et al., 2004). Products and process engineering positively improve organizational performance and help firms to remain competitive in the industry setting (Hitt and Ireland, 1985). The definition of 'business processes' are: activities underlying value generating processes which transform inputs to outputs, including sales, distribution, customer service, etc (Melville et al., 2004). Market-related performance is the outcome of business process effectiveness and is therefore suitable for measuring it. The following hypothesis is proposed:

*H4: Business process effectiveness is positively related to market-related performance.*

## **4 RESEARCH METHODOLOGY**

### **4.1 Data Collection**

Data collection in the service sector was used for assessing the research model. Industries, which face a dynamic environment and provide an important service for customers, were selected as representatives. Therefore, the healthcare and financial industries were chosen for this survey. The healthcare organizations include medical centers, regional hospitals, and district hospitals. They mainly provide medical services for their patients. The financial firms include banks, security firms,

and insurance companies. They provide financial services and related insurance for their customers. Since money and life are essential to people, these two industries need to provide error-free and high quality services. Knowledge based resources are also critical for hospitals and financial firms since they help them to do the right things and win customer confidence.

## 4.2 Measures

This study collected data for assessing the research model. *KM infrastructure* was measured by technological, structural, and cultural support. *KM technological support* assessed the degree to which technology supported collaboration with other persons, searching new knowledge, retrieving and using knowledge. *Organizational structural support* assessed the degree to which the organizational structure facilitates the discovery and creation of new knowledge and has a standardized reward system for sharing it. *Organizational cultural support* was measured by the extent to which employees are encouraged to explore and experiment, to ask others for assistance, to interact with others, and the extent of the organization's vision for the future and senior management support. *KM capability* was measured by the extent to which organizations are able to create, transfer, integrate, and leverage organizational knowledge. It includes product, customer, and managerial knowledge.

*Business process effectiveness* was measured by process efficiency, effectiveness, and flexibility. *Process efficiency* was measured by the extent to which organizations are able to reduce operational costs and decrease the need for error correction work. *Process effectiveness* was measured by the extent to which organizations are able to add value to operations, access data in a timely manner, integrate higher-level data, make better sales forecasts, and precisely meet the requirements of the job. *Process flexibility* was measured by the extent to which organizations are able to customize processes, making the organization itself more agile, improving operation flexibility, and adapting to the changing environment.

According to the core concept of the value chain perspective, *market-related performance* was measured by, product and service enhancement, sales and marketing support, and customer relations. *Product and service enhancement* was measured by the organizational ability to enhance the value and quality of the product/service, decrease the cost of designing the product/service, reduce the time to market, and support product/service innovation. *Sales and marketing support* was measured by the organizational ability to identify market trends, anticipate customer needs, increase amounts of service or sales, achieve accuracy of sales forecasts, and track market response. *Customer relations* was measured by the organizational ability to provide after-sales service and support, enhance the flexibility and responsiveness to customer needs, distribute goods and service, attract and retain customers, and support customers during the sales process. Larger firms have greater resources than smaller firms to create knowledge (Dr öge et al., 2003; Tanriverdi, 2005), so this study used firm size as a control variable.

KM infrastructure was measured with 37 items adopted from Gold et al. (2001). KM capabilities were measured with 12 items developed by Tanriverdi (2005). Business process effectiveness was measured with 14 items validated by Karimi et al. (2007). Market-related performance was measured with 15 items adopted from Tallon et al. (2000). All items were measured using either the five-point or seven-point Likert scales anchored with "strongly disagree" and "strongly agree" as found in the original studies. KM infrastructure and market-related performance were measured in seven-point Likert scales. KM capabilities and business process effectiveness were measured in five-point Likert scales. Prior to the full-item survey, a pretest was conducted to ensure reliability, readability, and understandability. Three academic professors and 30 experienced MBA students were selected for the pretest. According their suggestions and to ensure content validity, the wording and format of the questionnaire were modified.

## 5 DATA ANALYSIS

The data were analyzed using AMOS 7.0, a software package based on SEM techniques. 166 valid responses were received from the hospitals and 106 valid responses from financial firms. 212 surveys were conducted to check dimensional scales by using confirmatory factor analysis. Items for each dimensional scale were subjected to scale refinement based on an evaluation of model fit (Janz & Prasarnphanich, 2003; Joreskog & Sorbom, 1998). The seven model fit indices for the evaluation of model validity, including the normed chi-square (chi-square/degrees of freedom;  $\chi^2 / d.f.$ ), the standardized root mean square residual (standardized RMSR), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the normed fit index (NFI), and the comparative fit index (CFI) were used as goodness-of-fit measures (Janz and Prasarnphanich, 2003). A normed chi-square between 2.0 and 5.0 is considerable acceptable, and a standardized RMSR should be greater than 1 (Hair et al., 2010). GFI, NFI, and CFI should be above 0.9 and the AGFI should be greater than 0.8 to be acceptable (Segars and Grover, 1993). The dimensional scales and goodness-of-fit indices are shown in Table 1. All goodness-of-fit indices satisfy the recommended value. The Cronbach's alpha values of each indicator are greater than 0.8 which shows good scale reliability as in Table 1.

### 5.1 Descriptive Statistics

In Study 1 (hospitals), 34 percent of the informants were IT department managers and 61 percent were senior managers in charge of hospital administration. Common KM technologies implemented included intranet (57%), data warehouse management (41%), and search engines (32%). In Study 2 (financial firms), 31 percent of the informants were at senior management level, and 61 percent were bank clerks. Common KM technologies implemented included intranet (51%), document management software (43%), and data warehouse management (30%).

### 5.2 Measurement Model Analysis

The measurement model with four constructs was assessed using confirmatory factor analysis (Anderson & Gerbing, 1992). Table 2 presents goodness-of-fit indices, factor loadings, and the corresponding t-values of indicators in all of the measurement models, including the overall model (the sample is summed up by hospitals and financial firms), Study 1 (hospitals), and Study 2 (financial firms). All the loadings exceed 0.70 and each indicator is significant at the 0.001 level. All of the model fit measures are acceptable, except for GFI in the model of the financial industry. It is 0.88, slightly lower than 0.9.

The factor loadings of the indicators, construct reliability (CR), and average variance extracted (AVE), were used as measures of convergent validity (Hair et al., 2010). Each indicator of reliability exceeds 0.7. The CR exceeds 0.5 and the AVE exceeds 0.5. The results indicate discriminant validity that is supported by the square root of AVE being greater than the correlation estimate of any two constructs.

### 5.3 Structural Model Analysis

The structural model analysis was conducted to examine the hypothesized relationships among constructs (Janz and Prasarnphanich, 2003). The results from the structural model used to test the hypothesized research models are summarized in Table 3. Table 3 also shows the goodness of fit indices in the two structural models, respectively. The goodness of fit indices are considered quite acceptable except that the GFI is slightly lower than 0.9.

In these two studies, the results show that both KM infrastructure (H1) and KM capability (H3) influence business process effectiveness. The effect of KM infrastructure has an influence on KM capability (H2). The effect of business process effectiveness has an influence on market-related performance (H4). The control variable was not significant in the healthcare industry but slightly negatively significant in the financial industry.



This study conducted mediating tests to understand the effect of business process effectiveness on two relationships (Baron and Kenny, 1986; Ryu et al., 2009). The first is being the relationship between KM capabilities and market-related performance. The second is being the relationship between KM infrastructure and market-related performance. The results show that business process effectiveness has a partial mediation effect on these two relationships.

Construct/Indicator	Scale Reliability	$\chi^2$	df	$\chi^2/df$	GFI	AGFI	NFI	CFI	RMSR
KM infrastructure Support									
Technology Support	0.81	137.38	51	2.96	0.93	0.89	0.93	0.96	0.89
Organizational Structure Support	0.84								
Organizational Culture Support	0.89								
KM capabilities		212.06	51	4.16	0.88	0.82	0.92	0.94	0.03
Product KM capability	0.87								
Customer KM capability	0.86								
Managerial KM capability	0.88								
Business Process Effectiveness		217.60	62	3.51	0.88	0.82	0.93	0.95	0.02
Process Efficiency	0.89								
Process Effectiveness	0.90								
Process Flexibility	0.91								
Market-Related Performance		208.98	62	3.37	0.89	0.84	0.95	0.96	0.58
Product and Service Enhancement	0.92								
Sales and Marketing Support	0.96								
Customer Relations	0.94								

Table 1. Reliabilities of the indicators (overall model) and model fit measures (overall model  $n= 272$ ).

Construct/Indicator	Factor Loading	Factor Loading	Factor Loading
	( <i>t</i> value) Overall Model n = 272	( <i>t</i> value) Healthcare Industry n = 166	( <i>t</i> values) Financial Industry n = 106
<b>KM infrastructure</b>			
Technology Support	0.75 (13.92)	0.76 (11.21)	0.97 (8.69)
Organizational Structure Support	0.71 (12.78)	0.66 (9.27)	0.80 (9.34)
Organizational Culture Support	0.86 (16.77)	0.89 (14.18)	0.82 (9.72)
<b>KM capabilities</b>			
Product KM capability	0.92 (19.70)	0.94 (16.05)	0.90 (11.86)
Customer KM capability	0.90 (18.83)	0.91 (15.22)	0.93 (11.42)
Managerial KM capability	0.94 (20.49)	0.93 (15.59)	0.95 (12.86)
<b>Business Process Effectiveness</b>			
Process Efficiency	0.87 (17.69)	0.82 (12.62)	0.91 (11.87)
Process Effectiveness	0.93 (20.05)	0.94 (15.91)	0.93 (12.48)
Process Flexibility	0.88 (18.30)	0.88 (14.11)	0.89 (11.55)
<b>Market-Related Performance</b>			
Product and Service Enhancement	0.89 (18.10)	0.89 (13.81)	0.88 (11.42)
Sales and Marketing Support	0.80 (15.27)	0.73 (10.40)	0.89 (11.61)
Customer Relations	0.85 (16.89)	0.71 (10.14)	0.97 (13.50)
$\chi^2$	116.93	100.12	81.26
d.f.	48	48	48
$\chi^2$ / d.f.	2.44	2.09	1.69
GFI	0.94	0.91	0.88
AGFI	0.89	0.85	0.81
CFI	0.98	0.97	0.97
NFI	0.96	0.94	0.94
RMSR	0.03	0.02	0.05

Table 2. Factor loadings and *t*-values of three measurement model

Industry Sample Size (n)	Healthcare Industry (166)	Financial Industry (106)
H1: KM Infrastructure → KM Capabilities	0.85***	0.81***
H2: KM Infrastructure → Business Process Effectiveness	0.66***	0.48***
H3: KM Capabilities → Business Process Effectiveness	0.28*	0.43**
H4: Business Process Effectiveness → Market-Related Performance	0.81***	0.67***
(Control variable) Firm Size → Market-Related Performance	0.06	-0.16*
R <sup>2</sup> (KM Capabilities)	0.72	0.65
R <sup>2</sup> (Business Process Effectiveness)	0.81	0.74
R <sup>2</sup> (Market-Related Performance)	0.66	0.50
$\chi^2$	172.31	100.99
d.f.	60	60
$\chi^2$ / d.f.	2.87	1.68
GFI	0.87	0.87
AGFI	0.80	0.80
CFI	0.94	0.97
NFI	0.91	0.92
RMSR	0.06	0.07

Notes: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 3. The Result of the Two Studies

## 6 DISCUSSION AND IMPLICATIONS

The findings showed that KM infrastructure significantly affected KM capabilities and business process effectiveness. The KM related technological, organizational, and cultural support showed

which organization was capable of managing competitive knowledge and business processes.

Within the hospitals and financial firms, the effect of KM infrastructure had slightly different influences on KM capabilities but more varied influences on business process effectiveness. In accordance with improving business process effectiveness, KM infrastructure has a greater degree of support to hospitals than to financial firms. In the hospitals, the effect of KM capabilities was less significant on business process effectiveness than in the financial industry. The reasons for the slight difference may result from the nature of the industry. In hospitals, organizational structure is more centralized than in financial firms so the KM infrastructure can be more effective. In financial firms, the various portfolios of financial products are determined by the customers whereas with the medical service decisions are made by the physicians. Thus, product, customer, and managerial KM capabilities have more effect on the business process in financial firms. The different results of these two studies showed that KM infrastructure and KM capabilities had different influences on business process effectiveness. In both of the two industries, business process effectiveness has a significant influence on market-related performance. Product and service enhancement, sales and marketing support, as well as customer relations were improved by upgrading business processes. The organizational business process effectively supports healthcare and financial service quality, market trend forecasts, retaining of customers, and also has the ability to provide after-sales service and timely responsiveness.

### **6.1 Implications for Research**

The findings of the two studies provide a better understanding of the effect of KM infrastructure and capabilities in the service sector. Although these results can not be applied to all industries in the service sector, they do indicate which organizations provide critical and customer-oriented service. The significant influence of KM infrastructure and KM capabilities provide considerable variance to explaining business process effectiveness. The relationship between KM infrastructure and KM capabilities should also not be overlooked. Further research could consider the characteristics of these two industries and identify the influence of them on KM effectiveness.

This study contributes to current research by applying KBV to understand the value of KM capability based on organizational infrastructure. In addition to technological support, KM capabilities need organizational, structural and cultural support. The value of KM infrastructure and capabilities was assessed by the relationships with business process effectiveness. The relationships between KM infrastructure, KM capabilities, and the business process have highlighted the development of organizational capability by utilizing the KBV.

According to the competitive advantage concepts of KBV, the greater the degree of KM infrastructure and capabilities the more improved is the market-related performance. The results of this survey in the healthcare industry and financial industry applied the value of KBV to demonstrate that the effect of knowledge influences market-related performance.

### **6.2 Implications for Practice**

The findings suggest that KM infrastructure is a useful instrument for the development of KM capabilities and business process effectiveness. KM infrastructure can be developed by KM technological, structural, and cultural support. In the hospital, cultural support is more important than technological and structural support. Thus, the senior executives of hospitals should clearly provide support and encouragement for KM activities. Hospitals also need to establish a clear vision and infuse it into their employees. With financial firms, the various portfolios of financial products result in complexity in KM so KM capabilities are becoming increasingly more important for them. Executives need to pay more attention to managing product, customer, and managerial KM capabilities.

In addition to the effect of KM infrastructure, KM capabilities can improve market-related support through business process effectiveness. It should be understood in the evaluation index that the value of KM infrastructure and KM capabilities improve market-related performance.

### 6.3 Limitations and Suggestions for Future Research

The findings explored in this study should be considered in light of the following limitations. First, this study relied on cross-sectional survey data, but the feedback regarding the outcome of business processes may alter KM infrastructure and KM capabilities depending on time variations. Second, results may differ in smaller hospitals or financial firms because most respondents in this survey were from medical centers and regional hospitals which have a longer history or a greater number of employees. Third, because the samples were restricted to the healthcare industry and financial industry in Taiwan, the ability to apply the results to service sectors across the globe may be somewhat limited. More studies in other service industries or other countries are needed to establish the robustness of the findings in this survey.

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