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Strategy alignment between HRM, KM, and corporate development

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Abstract

Purpose – This study seeks to examine the relationships between corporate strategy, human resource management (HRM) strategy, and knowledge management (KM) strategy, as well as their interactive influence on KM effectiveness.

Design/methodology/approach – Samples studied are 147 Taiwanese large companies in banking, services, and manufacturing industries; responses from multiple informants are collected from each firm.

Findings – Results indicate that firms pursuing cost leadership strategy and buy-bureaucratic HRM strategy are more likely to adopt codification KM strategy. Firms adopting differentiation strategy and make-organic HRM strategy are associated with frequent use of personalization KM strategy.

Originality/value – This study finds that fit between KM strategy and both corporate as well as HRM strategy are significantly related to better KM effectiveness in terms of process outcome, learning capability, and organizational outcomes.

Keywords Human resource strategies, Knowledge management, Corporate strategy, Taiwan

Paper type Research paper

Introduction

Knowledge management (KM) refers to the process of capturing the collective expertise and intelligence in an organization and using them to foster innovations through continued organizational learning (Nonaka, 1991; Quinn *et al.*, 1996; Davenport and Prusak, 1998). In the past 20 years, KM has led to new technological improvements as well as developments of new concepts. If used properly, KM can help organizations become more flexible as well as become better learning places (Yahya and Goh, 2002). KM is expected to improve and create competitive advantages for business enterprises.

The aspect of viewing knowledge as a means to improve company's competitive ability inevitably endows KM with a "strategic" attribute; KM is posited to help firms remain viable in turbulent environments (Winter, 1987). This sounds quite similar to a long-familiar concept of "strategy", which has attracted the attentions of managers as well as scholars for several decades on how to align company's available resources to ensure corporate survival and success (Hofer and Davoust, 1977). Yet, we have not seen many studies link KM with the existing literature on company strategy. Based on the above literature, we argue KM is a strategic tool that strengthens competitive ability. However, we are not sure how KM can be properly used to complement these other

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corporate actions to best enhance a company's competitive advantage? How can we take our present knowledge of KM and build on what we have already known about company strategies to help us better manage a firm? This research tries to propose a relationship between company strategy and KM strategy.

On the other hand, scholars of KM have noticed that KM involves not only a set of software and hardware infrastructures but also corresponding organizational arrangements such as culture and people (Meso and Smith, 2000). Knowledge is created by and rests in individual employees. Equally well, it is created through social interactions and is embedded in the social structure of organizational members (Narasimha, 2000). Hence, how a company organizes its employees through company's human resource management (HRM) systems significantly facilitates or hinders the development and exploitation of organizational knowledge. However, we have found few studies exploring how organizational factors, such as HRM strategy and practices, affect the outcome of KM. There exist even fewer empirical studies that try to verify the relationship between company HRM strategy and KM effectiveness.

In this paper, we try to explore the relationship between corporate strategy, KM strategy, and HRM strategy. From a contingency aspect, we tend to demonstrate that fit between corporate strategy and HRM strategy with KM strategy are significantly related to better KM effectiveness.

Literature review and hypotheses

Knowledge management and KM strategy

Knowledge management is a set of activities that helps a firm to acquire knowledge from both inside and outside of the company. Organizations expect to utilize the information provided through KM to help them accomplish their missions (Wiig, 1995). The process of creation, acquirement, and utilization of knowledge is posited to improve organizational performance (Laurie, 1997). In order to achieve the desired outcome, organizations not only have to build appropriate IT infrastructures but also have to integrate human, computer systems, network technologies, and other corresponding organizational arrangements to effectively obtain, store, and utilize knowledge (Meso and Smith 2000).

The above perspectives endow KM with a strategic attribute, i.e. KM is a set of organizational arrangements aimed at achieving specific organizational purposes. Through multiple case studies, Drew (1999) discovered that companies interviewed combine KM with organizational objectives and form a set of operating arrangements to implement KM activities. Zack (1999) also found that when conducting KM, companies adopt different administrative procedures according to their different strategic missions. These findings indicate that it is appropriate to view KM as a company strategic tool. Although we have not yet seen many scholars explicitly classify KM strategy and link KM strategy with the existing literature of corporate strategies, we think it is fair to infer KM strategy from observing the KM activities a company conducts (Mintzberg, 1973).

Among the presently available literature, KM strategy is often classified by the nature of knowledge itself, i.e. whether knowledge is explicit or implicit (Hansen *et al.*, 1999; Schulz and Jobe, 2001). Explicit knowledge refers to the information that can be transferred in a systematized and standardized manner. Therefore, the management of explicit knowledge is also called "codification knowledge management strategy"

(Hansen *et al.*, 1999). Companies adopting such strategy document useful information in large-scaled database. The knowledge stored is standardized and can be easily accessed and be reused by corresponding personnel. The products or services of such firms tend to be standardized and firms emphasize the reuse of knowledge. They try to expand their standardized operations to achieve economy of scale and charge lower fees for their products or services to expand market share. Since operating knowledge is mainly stored in database and transferred by interactions between employees and IT infrastructure, firms adopting codification KM strategy provide fewer chances for interpersonal connections between workers.

Implicit knowledge exists within individuals. It is comparatively more difficult to formalize and cannot be expressed in a standardized and systematic manner. The management of implicit knowledge is also called "personalization knowledge management strategy" (Hansen *et al.*, 1999). Companies adopting such strategy offer specialized products or services to satisfy specific customer needs. A large part of their operating knowledge is implicit and cannot be codified and stored in database to be easily reutilized. Employees in such firms, in order to successfully carry out their missions, have to interact extensively with their colleagues to obtain such implicit knowledge. In order to facilitate this process, companies adopting personalized KM strategy have to extensively use task force groups, emphasize organizational learning mechanisms, and encourage employee interactions through appraisal and compensation systems concerning knowledge sharing, accumulation, and creation.

The concept of fit from a contingent aspect

Scholars of the long-established school of "contingent theories" assert that a company performs better when its organizational characteristics comply with its environmental conditions (Chandler, 1962; Woodward, 1965; Lawrence and Lorsch, 1967; Galbraith, 1977). The concept of "fitness" is one among the key notions advocated by contingent theorists (Pennings, 1987; Donaldson, 2001). "Fitness" refers to the coordination between the demand, objectives, and structures of one part of an organization with the demand, objectives, and structures of another part of an organization (Nadler and Tushman, 1988). The better the degree of coordination, the better the organization's performance (Schoonhoven, 1981; Tushman, 1979; Miller, 1981).

The concept of fit has often been applied in the realm of strategic management, exploring how a company should align its strategy with organization's structure, technology, market conditions, and various environmental factors (Miller, 1986; Tichy, 1983; Prescott, 1986). Proper alignment between strategy and related contingent factors can help to enhance company's performance (Woo and Cooper, 1981; Hambrick, 1984). If various related contingent factors are not aligned with strategy, the company cannot effectively organize available resources toward the planned direction, and its performance will, consequently, suffer (Lawless, 1987). Since various kinds of functional strategies interact with each other, company must maintain a status of coordination among various related contingent factors to facilitate the attainment of its strategic objectives (Porter, 1980; Galbraith and Schendel, 1983).

Corporate strategy and KM strategy

Based on the above argument, it is reasonable to expect that, in order to facilitate the implementation of KM and achieve corporate objectives, KM strategy should comply

with company strategy (Nonaka and Takeuchi, 1995; Nahapiet and Goshal, 1998; Ulrich, 1998). While KM is regarded as useful tool in implementing company strategy, we have not found many theoretical studies linking KM strategy with our present understandings concerning company strategies.

From the concept of "fit" and the classification of KM strategy as "personalization" versus "codification" (Hansen *et al.*, 1999), as discussed in the previous section, we think such classification corresponds well with a well-known business strategy category purported by Porter (1980). Under Porter's famous taxonomy as "cost leadership" and "differentiation" strategies, the former refers to an organization pursuing production efficiency and economy of scale. Companies adopting such strategy tend to manufacture standardized products to lower unit production cost. In terms of KM strategy, such company will emphasize the re-utilization of knowledge to lower the cost of providing per item of information. Such company will invest heavily in installing large-scaled database and will attract clients with lower charged fees to obtain a larger market share. Under a cost leadership strategy, the KM strategy of such firms will look more similar to a "codification KM strategy".

On the other hand, if a company adopts differentiation strategy, it will tend to produce differentiated or customized products to satisfy particular customer needs. KM strategy in such firms will emphasize interactions among organizational members as well as the creation of new knowledge. Instead of investing heavily on standardized database infrastructure, such companies will put more emphasis on establishing interpersonal connections, they will also encourage communication as well as brainstorming among organizational members. Such practices resemble "personalization KM strategy". We summarize the characteristics of corporate strategy, KM strategy, and HRM strategy in Table I.

Based on the above discussions, we would like to make the following proposals:

H1. Corporate strategy is connected to KM strategy.

H1.1. If a company adopts cost leadership strategy, it is KM strategic arrangements will tend to be closer to that of codification strategy

H1.2. If a company adopts differentiation strategy, it is KM strategic arrangements will tend to be similar to that of personalization strategy.

Human resource management strategy and KM strategy

Scholars of strategic human resource management (SHRM) assert that various company HRM practices should complement each other (Baird and Meshoulam, 1988). A fit among HRM practices can improve employee performance and enhance company's core competitive advantage (Huselid, 1995; Huselid *et al.*, 1997).

While knowledge is basically created by and resides in people, the successful implementation of KM is inseparably related to corporate HRM strategy and practices. HRM practices significantly affect organizational members' attitude, belief, and value systems (Marshall *et al.*, 1996). They play an important role in facilitating employees' absorption, transfer, sharing, and creation of knowledge (Soliman and Spooner, 2000). Compensation, education and training, and performance management programs are significantly affect employees' motives and behaviors in participating KM activities (Greengard, 1998). Adopting proper HRM strategy and practices significantly facilitates the successful implementation of KM strategy.

Table I.
Comparison between corporate strategy, KM strategy, and HRM strategy

Corporate strategy	KM strategy	HRM strategy
Cost leadership strategy	*Codification KM strategy*	*Buy-bureaucratic HRM strategy*
Aiming at lowering cost and promoting efficiency	Re-utilization of knowledge to lower the cost of providing per item of information	Close supervision to minimize the cost of error
Strict control of cost	Emphasize the reuse of knowledge, few chances of interpersonal connection between employees	Clear and specific work definition
Emphasizing efficient way of operation	Explicit knowledge	Result-oriented performance evaluation used as a control mechanism
Simplify and standardize operating process	Standardized and systematized way of knowledge transfer	Limited training
Product design emphasizing facilitating production	Document useful information in large database	Workers do not participate in management decisions
Clear delineation of responsibilities	Knowledge is transferred by interactions between employees and IT infrastructure	
Differentiation strategy	*Personalization KM strategy*	*Make-organic HRM strategy*
Aiming at innovation and responsiveness	Offer specialized products or services to satisfy specific customer needs	Wide job category, often having cross-functional communications
Emphasizing marketing ability as well as product development and design	Emphasizing interactions among organizational members	Problem solving through team-efforts
Emphasizing the quality of products and services	Encourage employee interactions through appraisal and compensation systems related to knowledge sharing, accumulation, and creation	Empowerment
Highlighting responsiveness to customers' demands	Tacit knowledge	Highlighting worker development and trainings
Recruiting innovative employees with high technical standards	Knowledge transfer is not mainly depended on systematized, standardized manner	Recruiting innovative employees with high technical standards
		Process-oriented performance evaluation used as basis for employee development

Among SHRM literature, scholars try to classify HRM strategies based on different corporate HRM arrangements (Huselid, 1995). By observing how companies acquire and manage their workforce, Delery and Doty (1996) identified different organizational employment systems as "market system" and "internal system". Such classification is similar to Bae *et al.* (1998), who differentiated corporate HRM practices as "buy-bureaucratic" or "make-organic" strategies. The former stresses cost control and is similar in nature to cost leadership strategy (Arthur, 1992; MacDuffie, 1995). Companies adopting "buy-bureaucratic" HRM strategy tend to recruit managers from outside of the firm, provide limited trainings, define job contents specifically, emphasize seniority in calculating compensation, and limit employee participation in decision-making. On the other hand, companies adopting "make-organic" HRM strategy tend to promote middle-level managers from within, provide extensive trainings, adopt job enrichment and define jobs in a much broader aspect, emphasize performance-based pay, and allow more employee participation in decision-making.

According to Lepak (1999), companies adopting "make-organic" HRM strategy can nurture a set of more stabilized work force. Their employees are more committed to the company and interact more extensively among themselves. Conversely, companies adopting "buy-bureaucratic" HRM strategy will have a work force with lower level of cooperation and trust. It will be more difficult to accomplish knowledge transfer through people in such companies.

From the above discussions, we assert that "make-organic" HRM strategy is compatible with "personalization KM strategy". Under "make-organic" HRM scheme, company tends to promote from within, enhance employee abilities through extensive training, and adopt compensation systems that encourage employees' sharing of their tacit knowledge. In another respect, a "personalization KM strategy" will stress employee trainings that nurture their analytical ability and creativity. Such strategy also encourages employees' sharing of knowledge (Delery and Doty, 1996). From this angle, the "make-organic" HRM strategy is more compatible with "personalization KM strategy".

The "buy-bureaucratic" HRM strategy is compatible with "codification KM strategy". Companies adopting "buy-bureaucratic" HRM strategy tend to recruit management talents from outside. They will have specific job descriptions; work-related skill and knowledge is also transferred mainly through written documents. Employees have comparatively less opportunities to receive extensive training. On the other hand, a "codification KM strategy" also stresses knowledge transfer through documented records. Companies adopting codification KM strategy will invest heavily in system infrastructure and provide less training to employees. Such firms will provide fewer opportunities for interpersonal connections among employees (Hansen *et al.*, 1999). From this aspect, the "buy-bureaucratic" HRM strategy is compatible and more similar to "codification KM strategy".

Based on the above, we would like to make the following hypotheses:

H2. Corporate human resource management strategy relates to KM strategy.

H2.1. If a company adopts make-organic HRM strategy, its KM strategy will tend to be closer to personalization KM strategy

H2.2. If a company adopts buy-bureaucratic HRM strategy, its KM strategy will tend to be similar to codification KM strategy.

Strategic fit and knowledge management effectiveness

The concept of fit is a prevalent topic in strategy literature (Venkatraman, 1989). If various organizational arrangements are not integrated or congruent with the overall strategy, companies shall have unclear strategic direction that leads to suboptimal or dysfunctional outcomes (Lawless, 1987). On the other hand, many scholars of knowledge management assert that KM practices should complement corporate strategic arrangements to achieve best results (Nonaka and Takeuchi, 1995; Nahapiet and Goshal, 1998; Ulrich, 1998). Managers are urged to explicitly connect their company's competitive strategy with other related organizational arrangements to facilitate the attainment of company goals (Hansen *et al.*, 1999). When managers actively choose a KM approach that supports a clear competitive strategy, both the company and its customers benefit.

Some organizational HRM practices, such as job security and profit sharing, are found to be key contributor to the accomplishment of corporate strategic objectives (Delery and Doty, 1996). Lawler (1981) found that, unless pay strategies reinforce organization's overall strategy, the return on compensation dollars would suffer. With the advent of resource-based theory (Barney, 1991), intellectual capital that resides within individual workers is gaining increasing recognition as the only true strategic asset. More companies come to realize that their most-valuable knowledge exists within people's head, augmented or shared via interpersonal interaction and social relationship (Zack, 1999). Many companies are experimenting with new organizational culture, forms, and reward systems to enhance such "social" mechanism. The normative implication in doing so is that many organizational arrangements, especially when they concern the management of people, should be aligned and integrated with company strategic objectives to provide a comprehensive infrastructure to support knowledge management.

Therefore, it is reasonable to expect that a fit between corporate strategy, KM strategy, and HRM strategy will enhance KM effectiveness:

H3. Fit between corporate strategy and KM strategy is related to better knowledge management effectiveness.

H4. Fit between corporate HRM strategy and KM strategy is related to higher KM effectiveness.

Methods

Sample and procedures

Companies involved in this study come from the Commonwealth survey in Taiwan, 2002. This survey is a well-known database in Taiwan containing established large Taiwanese firms and is considered representative of Taiwan's industrial status. Commonwealth survey involves companies in three major industry categories: manufacturing, banking, and services. Within each industry category, firms are first ranked according to asset scale into several groups. Then, stratified sampling is applied to obtain random samples. Thousand firms are selected, including 620 in manufacturing, 65 in banking, and 315 in service industry.

Questionnaires were mailed to these firms asking four groups of information concerning corporate strategy, HRM strategy, KM strategy, and KM effectiveness. Based on the classification proposed by Nonaka (1991) and Alavi and Leidner (1999),

we further divide KM effectiveness into three dimensions: "process efficiency", "learning capability", and "organizational performance". A first set of questionnaires were sent to the general managers asking company general information, corporate strategy, HRM strategy, and items of KM effectiveness that relate to organizational performance. After two weeks, an identical questionnaire was mailed to the general managers who had not yet responded. We finally collected 187 effective responses.

Each general manager was then asked to provide the names of manager in charge of KM in their institution. Of the 187 participating general managers, 165 provided the names of KM managers. Another set of questionnaires was sent to these KM managers asking questions concerning KM strategy and KM effectiveness that relate to process efficiency and learning capability. The same procedure of mailing questionnaires, as stated above, was adopted. Finally, we had 156 KM managers to participate in the study; they came from four different functional departments: human resource (75), information (39), general management (12) and KM (30).

Criterion for a valid observation is that usable questionnaires from both respondents are collected. Our final sample size becomes 147. They include 92 firms in the manufacturing industry, 11 firms in the banking industry, and 44 firms in the service industry. Average response rate comes to approximately 14 percent. Every company represents one single business, i.e. if a conglomerate has multiple business units, these businesses will be represented as another firm. These companies have an average 18.54 years of history and 263 employees. 76.9 percent of them are unionized. Within the manufacturing sector, 92 observations come from computer and electronics, machinery, chemical and petrochemical, textile, steel manufacturing, and food processing. In the service sector, 44 firms come from ocean and airfreight, hotel and tourism, as well as retailing. Within the banking sector, 11 firms come from commercial banks, investment banks, insurance companies, and security companies. A check of these samples across different business nature, company size, and company age reveals no special response bias. This sample, we believe, can be considered as representative of Taiwan's present general industry status. Non-response bias is also checked through a time trend extrapolation test (Armstrong and Overton, 1997). Multivariate general linear model is employed to examine the difference between late respondents (those whose questionnaires are received after the second mailing) and their earlier counterparts in firm size, age, union status, and market competition. We find no significant difference exist between these two groups.

As to the respondents, general mangers filling the questionnaires have an average of 5.9 years of service history with the company while KM managers have an average of 3.2 years of service history with their firms. We think such time span is sufficient to familiar them with their company's situations and makes them effective respondents to provide us with the information we need.

Measurements

Questionnaire items concerning corporate strategy, HRM strategy, KM strategy, and KM effectiveness are based on comprehensive review of previous research. A panel of experts, including senior scholars and professional managers in the respective fields help us to ascertain the adequacy of the wordings in our questionnaire. Full texts of these questionnaire items are listed in the Appendix – Table AI. The following sections discuss each measurement in detail.

Corporate strategy

Eight items adapted from Porter (1980), Dess and Davis (1984) and Segev (1989) are used to measure corporate strategy. To test the relationship between corporate strategy and KM strategy, cluster analysis is used following the works of Porter (1980) and Dess and Davis (1984). Two clusters are found from this analysis and are coded as dichotomous variable for further examination. Then, we try to obtain a single measure of corporate strategy to examine the impact of contingent effect of corporate strategy and KM strategy (interaction term) on KM effectiveness. We use principal components factor analysis with varimax rotation to obtain one factor representing the firm's intention in its business strategy. Higher value on this factor indicates that the firm prefers to adopt differentiation strategy. This variable has a Cronbach's α of 0.90.

Human resource management strategy. Eleven different HR policies adapted from Huselid (1995), Delery and Doty (1996) and Bae *et al.* (1998) are conceptualized to measure firm's strategic intention in HRM. Following conventional concepts on SHRM, we regard firm's HRM strategy as a set of interrelated systems of policies and practices for implementing business strategy (Arthur, 1992; MacDuffie, 1995; Youndt *et al.*, 1996). Therefore, a single index of HRM strategy is created from the mean of those 11 questions. Higher value on this index means that the firm inclines to adopt make-organic HRM strategy. This variable has a Cronbach's α of 0.89.

In this study, the informants for HRM strategy are company's general managers. However, as stated before, since 75 of our respondents are HR managers in charge of KM activities in their firms, these 75 HR/KM managers also are asked to provide responses on HR strategy. Hence, we have multiple respondents on HRM strategy. Mean value on their responses are calculated and used in our subsequent analyses. Interrater agreement, suggested by James *et al.* (1993) is calculated and regarded as appropriate ($r = 0.82$).

Knowledge management strategy. As discussed above, a firm's KM strategy relates to its strategic arrangements in building and managing knowledge stock through the effective process of creating, transferring and distributing knowledge (Alavi and Leidner, 1999). Based on Hansen *et al.* (1999), Schulz and Jobe (2001) and Zack (1999), we developed 12 questions of five point scale to measure firm's nature of business knowledge and strategic intention in managing its business knowledge. Principal components factor analysis with varimax rotation is used to detect the nature of these variables. All 12 items related to one factor with a Cronbach's α 0.90. To test contingency hypothesis, a single index is produced through the mean of those 12 variables. Higher value on this variable represents firm's intention in adopting personalization KM strategy.

Knowledge management effectiveness

The benefits of implementing KM should be multi-dimensional (Nonaka, 1991; Davenport and Prusak, 1998). KM effectiveness was operationalized in terms of:

(1) process efficiency;

(2) learning capability; and

(3) organizational performance (Nonaka, 1991; Alavi and Leidner, 1999).

Process efficiency includes four items used to measure employee's communication, staff participation, problem solving time, and the speed of decision-making. Learning

capability includes three items used to measure employee's ability in learning, acquiring knowledge, and innovation. Organizational performance includes four items used to measure firm's service quality, ability to satisfy target clientele, sales and profitability figures. The items in both process efficiency and learning capability ask respondents to indicate how satisfied they are with the results following the implementation of KM. The questions of organizational performance are used to assess each firm's performance relative to other firms' in its industry. All these questions are answered by KM managers or general managers, respectively. The Cronbach's α for these three dimensions are all greater than 0.80.

The information on KM effectiveness is collected by the respondent's subjective judgment. As an additional validity check, we compare sales and profitability items with their corresponding objective measures from *Taiwan Economic Journal (TEJ)* database. The outcomes show that both bivariate correlation figures attain significant level ($r = 82$, $p < 0.001$).

Control variables. To capture other organizational and environmental factors that may affect our research finding, we include seven additional variables in our regression to eliminate any extraneous effects prior to testing our hypotheses. Firm age is the number of years a firm had been in existence (2002 minus year of founding). Firm size is calculated by the natural logarithm of the number of full-time employees, since this figure may relate to the adoption of certain type of HRM strategy (Huselid *et al.*, 1997; Youndt *et al.*, 1996). Union status is also expected to be related to HRM strategy and organizational performance (Huselid and Rau, 1997). Information for this variable was gathered from general managers and double-checked by that obtained from HR managers. Firm is coded 1 if unionized, 0 if not. Since scholars on strategy and HRM argue that condition of market competition affects organizational performance (Delaney and Huselid, 1996), we therefore, ask general managers about the degree of competition their firms face in their corresponding product or service market (1 = none, 5 = a great deal). The industry environment in which the firms reside may have close relationship with their organizational performance. Munificence, dynamism, and complexity are then measured to capture environmental effects. Following Keats and Hitt (1988), munificence is assessed as the five-year growth in industry sales by regressing the natural logarithm of sales against time. Dynamism is measured by the antilogarithm for the standard error of the regression coefficient in the equation to reflect the degree of change in industry sales. For complexity, Duncan (1972) defines it as the heterogeneity of an organization's environment. Therefore, we follow Osterman (1994) and use one item to ask general manager to evaluate his perceived industry's complexity (1 = none, 5 = a great deal). The data used for calculating both munificence and dynamism are gathered from the *TEJ* database.

Results

Table II shows the means, standard deviations, correlations, and reliabilities figures (where appropriate) of our data. All correlation coefficients between KM strategy, HRM strategy, and corporate strategy reach significance level of 0.01. This provides preliminary evidence to support *H1* and *H2*.

H1. Corporate strategy is connected to KM strategy

Table II.
Descriptive statistics and correlations

Variables	Mean	SD	Alpha	1	2	3	4	5	6	7	8	9	10	11	12
Size	2.49	0.58													
Age	18.54	10.88		0.20*											
Union	0.77	0.42		−0.14	0.13										
Market competition	3.01	0.55		−0.03	−0.01	0.014									
Munificence	0.07	0.13		0.03	−0.50***	−0.12	−0.10								
Complexity	3.35	0.97		0.14	0.16*	0.03	−0.06	−0.11							
Dynamism	1.03	0.04		−0.16	−0.28**	−0.15	−0.17*	0.65***	−0.04						
Corporate strategy	2.51	0.64	0.90	0.36***	0.11	−0.16	0.01	−0.12	0.06	−0.18*					
HRM strategy	3.04	0.71	0.89	0.29**	0.11	−0.08	0.11	−0.17*	−0.03	−0.26**	0.60**				
KM strategy	2.11	0.50	0.90	0.03	0.11	−0.10	0.01	−0.12	0.01	−0.02	0.43**	0.43**			
Process efficiency	2.89	0.66	0.87	0.23**	0.23**	−0.24**	−0.12	−0.16	0.09	−0.03	0.34**	0.21**	0.26**		
Learning capability	3.09	0.77	0.86	0.20*	0.18*	−0.23**	−0.16	−0.11	0.13	−0.02	0.16*	0.13	0.16	0.81**	
Organization performance	2.59	0.63	0.83	0.15	0.13	−0.22**	−0.07	−0.14	0.06	−0.10	0.33**	0.31**	0.24**	0.72**	0.58**

Notes: N=147. ***$p < 0.001$; **$p < 0.01$; and *$p < 0.05$

One-way ANOVA is used to test the relationships between KM strategy with corporate strategy and HRM strategy. As mentioned above, cluster analysis was used to divide corporate strategy into two groups (i.e. cost leadership and differentiation strategy). KM strategy was calculated by the mean of individual KM items weighted by the corresponding factor loadings coming from factor analysis, as stated in the previous paragraph. Table III shows that the relationships between corporate strategy and KM strategy attain statistical significance ($F = 27.148$, $p < 0.001$). The above findings indicate that companies pursuing cost leadership corporate strategy tend to adopt codification KM strategy[1]. We also find inverse relationship in companies who adopt differentiation corporate strategy with personalization KM strategy. These findings support our hypothesis that corporate strategy is related to company's KM strategy:

H2. Human resource management strategy relates to KM strategy.

Similar procedures applied in examining *H1* were used here to test the connection between HRM and KM strategy. HRM strategy was divided into buy-bureaucratic and make-organic groups. The outcome of one-way ANOVA displayed at Table III shows that relationships between HRM and KM strategy attain statistical significance ($F = 24.959$, $p < 0.001$). The above findings indicate that companies pursuing make-organic HRM strategy tend to adopt personalized KM strategy. On the other hand, we find inverse relationships exist among companies who adopt buy-bureaucratic HRM strategy with codification KM strategy. Such findings support our hypothesis that company's HRM strategy is related to its KM strategy:

H3. Fit between corporate strategy and KM strategy is related to better knowledge management effectiveness.

H4. Fit between corporate HRM strategy and KM strategy is related to higher knowledge management effectiveness.

To examine the contingency hypotheses, hierarchical regression is adopted in the analysis to independently assess the impact of interaction items of KM strategy and two main research variables on KM effectiveness. In business strategy and SHRM literature, scholars argued that fit is most commonly measured in terms of interaction between two variables (Venkatraman, 1989; Huselid, 1995; Delery and Doty, 1996). Based on the theoretical discussion stated above, we assume that a predominantly differentiation strategy and make-organic HRM strategy would require more adoption of personalization KM strategy than would a cost leadership and buy-bureaucratic HRM strategy. Therefore, to test those fit hypotheses, we interact KM strategy variable with both corporate and HRM strategy variables, respectively. Since the direction of

	Corporate strategy		HRM strategy	
	Cost leadership, $n = 64$ ($\bar{x}$)	Differentiation, $n = 83$ ($\bar{x}$)	Buy-bureaucratic, $n = 70$ ($\bar{x}$)	Make-Organic, $n = 77$ ($\bar{x}$)
KM strategy	1.89 (0.42)	2.29*** (0.49)	1.91 (0.42)	2.29*** (0.50)

Notes: ***$p < 0.001$; **$p < 0.01$; and *$p < 0.05$ (F-test, one-way ANOVA)

Table III. Results of one-way ANOVA for corporate strategy, HRM strategy and KM strategy

the figures in those three variables was arranged to follow the theoretical expectation, the interaction outcomes should represent sample firm's status of fit among those variables.

Our overall procedure for each dependent variable (i.e. process efficiency, learning capability, and organizational performance) was the same. In step 1, the seven control variables are put in the regression model to control for possible extraneous effects across industries and organizations. In step 2, KM strategy and its counterparts, corporate strategy or HRM strategy, are entered respectively. In step 3, the interaction terms (i.e. corporate strategy by KM strategy, and HRM strategy by KM strategy) are entered. We can find support for those contingency hypotheses if the individual interaction term accounts for significant residual variance in KM effectiveness.

Tables IV and V show the connections between KM strategy, corporate strategy, and HRM strategy. Furthermore, the interaction terms were created from interval scales. We, therefore, replace those original variables by centered KM, corporate, and HRM strategy variables (i.e. transformed into deviation score form with means equal to zero) in the regression to remedy the possible risk of multicollinearity (Cronbach, 1987).

Hypothesis 3 posits that fit between corporate and KM strategy relates to better KM effectiveness. As shown in Table IV, the interaction item of corporate and KM strategy is significantly related to process efficiency ($\Delta R^2 = 0.08$, $F = 5.91$, $p < 0.001$), learning capability ($\Delta R^2 = 0.08, F = 3.23, p < 0.01$), and organizational performance ($\Delta R^2 = 0.03$, $F = 2.73$, $p < 0.05$) while controlling for demographic, industry, corporate and KM strategy variables. Specifically, we find that the interaction item has a significant effect on process efficiency ($b = 2.30$, $p < 0.001$), learning capability ($b = 2.29$, $p < 0.01$), and organizational performance ($b = 1.48$, $p < 0.05$), thereby providing consistent support for Hypothesis 3. This shows that better KM effectiveness appears to depend on properly aligned corporate strategy and KM strategy.

Hypothesis 4 states that match between HRM and KM strategy contributes to better KM effectiveness. The results in Table V shows that the interaction item accounts for significant incremental variance in process efficiency ($\Delta R^2 = 0.10$, $F = 17.55$, $p < 0.001$), learning capability ($\Delta R^2 = 0.12$, $F = 3.97$, $p < 0.001$), and organizational performance ($\Delta R^2 = 0.05$, $F = 3.34$, $p < 0.01$) while controlling for demographic, industry, HRM and KM strategy variables. We also find that the interaction of HRM strategy with KM strategy significantly relates to process efficiency ($b = 2.38$, $p < 0.001$), learning capability ($b = 2.53$, $p < 0.001$), and organizational performance ($b = 1.68$, $p < 0.01$). Such results provide strong evidence to support positive relationships between fit of HRM and KM strategy with KM effectiveness.

Discussion and conclusions

In this paper, we examine a sample of 147 large Taiwanese firms that can be regarded as representative of Taiwan's general industry status. We try to prove that company's strategic objectives and HRM strategy have close relationships with KM strategy. Furthermore, the alignment between KM strategy and both corporate and HRM strategy can effectively improve KM effectiveness. The major findings and implications are discussed in the following paragraphs.

Independent variables	Dependent variables: Process efficiency Step 1	Process efficiency Step 2	Process efficiency Step 3	Learning capability Step 1	Learning capability Step 2	Learning capability Step 3	Organizational performance Step 1	Organizational performance Step 2	Organizational performance Step 3
Controls									
Size	0.26**	0.18†	0.19*	0.17†	0.18†	0.19†	0.12	0.04	0.05
Age	−0.01	0.01	0.06	0.01	0.01	0.06	−0.04	−0.02	0.02
Union	−0.27**	−0.22*	−0.19*	−0.25**	−0.24*	−0.20*	−0.24*	−0.20*	−0.18†
Competition	−0.12	−0.12	−0.07	−0.14	−0.15	−0.10	−0.12	−0.12	−0.09
Munificence	−0.33*	−0.28*	−0.26*	−0.18	−0.16	−0.14	−0.20	−0.16	−0.15
Complexity	−0.02	−0.03	0.00	0.06	0.06	0.09	0.04	0.03	0.05
Dynamism	0.17	0.18	0.19†	0.06	0.05	0.06	−0.01	0.00	0.01
Corporate strategy		0.23*	−1.11**		−0.02	−1.35**		0.22*	−0.64
KM strategy		0.07	−1.29**		0.07	−1.28**		0.04	−0.83†
Corporate strategy × KM strategy			2.30***			2.29**			1.48*
R^2	0.20	0.27	0.35	0.14	0.15	0.22	0.11	0.16	0.20
ΔR^2		0.06	0.08		0.01	0.08		0.05	0.03
F	4.21***	4.54***	5.91***	2.68*	2.12*	3.23**	2.10*	2.45*	2.73**
ΔF		4.76*	13.62***		0.30	11.40**		3.34*	4.60*

Notes: N=147. Standardized regression coefficients are shown. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; and †$p < 0.10$

Table IV.
Results of regression analysis for corporate strategy, KM strategy, and KM effectiveness

Independent variables	Dependent variables: Process efficiency			Learning capability			Organizational performance		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Controls									
Size	0.26**	0.23*	0.29**	0.17†	0.17†	0.23*	0.12	0.04	0.07
Age	−0.01	−0.01	0.06	0.01	0.01	0.07	−0.04	−0.02	0.02
Union	−0.27**	−0.24**	−0.21*	−0.25**	−0.24*	−0.20*	−0.24*	−0.21*	−0.19*
Competition	−0.12	−0.13	−0.07	−0.14	−0.15	−0.09	−0.12	−0.14	−0.10
Munificence	−0.33*	−0.29*	−0.27*	−0.18	−0.16	−0.14	−0.20	−0.16	−0.14
Complexity	−0.02	−0.02	0.01	0.06	0.06	0.09	0.04	0.05	0.07
Dynamism	0.17	0.17	0.16***	0.06	0.06	0.05***	−0.01	0.02	0.02
HRM strategy		0.07	−1.32***		0.01	−1.47***		0.26*	−0.72†
KM strategy		0.14	−1.30***		0.06	−1.47***		0.03	−0.98*
HRM strategy × KM strategy			2.38***			2.53***			1.68**
R^2	0.20	0.23	0.34	0.14	0.14	0.26	0.11	0.18	0.23
ΔR^2		0.03	0.10		0.00	0.12		0.07	0.05
F	4.21***	3.84***	5.72***	2.68*	2.12*	3.97***	2.10*	2.73**	3.34**
ΔF		2.25	17.55***		0.29	17.81***		4.47*	7.46**

Notes: N=147. Standardized regression coefficients are shown. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; and †$p < 0.10$

Table V.
Results of regression analysis for HRM strategy, KM strategy, and KM effectiveness

First, the results indicate that both corporate and HRM strategy are closely related to KM strategy. Firms that focused on cost leadership strategy and maintain calculative relationship with employees are more likely to adopt codification KM strategy in arranging their KM activities. On the other hand, personalized KM strategy is much easily found in those companies who pursue differentiation strategy and keep long-term as well as committed connections with their workforce. Further, both corporate and HRM strategy play key roles in moderating the relationships between KM strategy and KM effectiveness. Our findings suggest that match between corporate and KM strategy significantly contributes to better KM effectiveness in terms of process efficiency, learning capability, and organizational performance. Similar outcomes are also discovered in the connection between KM effectiveness and fit between HRM and KM strategy. These findings may be interpreted to support a contingency approach to firm's KM. The design and implementation of KM is not in isolated mode. Both corporate and HRM strategy appears to be crucial factors contributing to better KM outcomes.

Theoretical implications of our findings are three folds. First, although KM has been alleged as an important means to enhance company competitiveness (Soliman and Spooner 2000), and that the management of people is inseparably related to KM results (Meso and Smith, 2000; Narasimha, 2000), few empirical studies have validated such assertions. Our research tentatively proves that a fit between corporate strategy and HRM strategy with KM strategy is related to better KM effectiveness. Hence, our findings expanded the realm of SHRM research by indicating a whole new set of variables to pay attention to, i.e. how a company matches its KM strategy with HRM strategy. The contingency perspective has been advocated widely by SHRM scholars who stress the match between human resource practices with strategic initiatives of the firm (Huselid, 1995; Delery and Doty, 1996). Our findings demonstrate that we should expand our conceptual model of SHRM to involve KM factors. Following the configurational perspective of SHRM scholars (Delery and Doty, 1996), HR system works simultaneously with other organizational variables. Future research is recommended to evaluate the effect of the concurrent interactions among HRM, KM, corporate strategy, and even other contextual variables, such as organization culture. Only then can we have a comprehensive understanding of the potentials of HR practices in better helping a firm attain its strategic objectives.

Secondly, since match of HRM practices with KM strategy is related to better performance, exactly what kind of employee competencies do HRM practices help nurture, which can bring about such benefits? How can HRM practices nurture such capabilities? What are the mechanisms involved in such process? Up to now, we find no research devoted to this direction. Our findings point out a new research direction that deserves future scholars' attentions.

Thirdly, compared to the well-developed measures of corporate and HRM strategy, the measurement of KM strategy and effectiveness is not mature. In this study, we have demonstrated that the result of KM implementation is multidimensional and we have established a preliminary tool for measuring such multidimensional KM effectiveness. We come out with a set of measurement indices according to research purpose and theoretical literature, and have obtained reasonably satisfactory outcomes. However, we urge future researcher to develop more valid variables to accurately assess firm's strategic intentions in managing KM and consequent benefits.

For instance, our study measures KM outcome with "perceived KM effectiveness" rather than with objective financial figures. Although this approach is employed in relevant SHRM research (Delaney and Huselid, 1996), and the high correlation between objective and perceived measures was found in selected variables, we recommend future researcher to identify the accurate financial indicators measuring KM outcomes.

Contribution of our research to practical managers is that we indicate what managers can do in coping their KM practices and HRM practices with their firm's competitive strategy. Companies with cost leadership strategy need standardized, mass produced, and re-utilized information to facilitate the attainment of corporate objectives in pursuing operation efficiency. They, therefore, should adopt codification KM strategy to support strategy implementation. Companies pursuing differentiation strategy should focus on customized products and services and adopt personalization KM strategy to produce tailor-made commodities through intensive communications and to nurture knowledge exchange mechanisms among employees.

Our findings also show to the managers that HRM strategy is another key factor in the process of KM. Codification KM strategy mandates employees to repeatedly communicate their knowledge through information systems by inputting and re-utilizing their operational knowledge. These required employee's behaviors are compatible with the spirit of buy-bureaucratic HRM strategy, which emphasizes inducing specific employee behaviors, providing limited trainings, and limited participation in the process of decision-making. On the other hand, make-organic HRM strategy, which emphasizes intensive employee communication, long-term trainings, and high involvement in decision-making are suitable to develop steady partnerships among employees to exchange unique experiences.

Several limitations suggest that our results be viewed with caution. First, our conclusions are based on examination of Taiwanese large firms. Concentrating observations to companies in a single country with single culture ruled out other confounding factors, such as possible influences that may be brought forward by multinational corporations with complex cultural backgrounds. In the methodology section, we have explained how we consider our sample as representative of Taiwan's general industry status. Hence, we think we have tentatively shown that, among Taiwanese companies, KM strategy is related to HRM strategy and company competitive strategy, and that a match of KM strategy with HRM strategy is related to better KM effectiveness. However, should we want to generalize our findings to involve other countries and cultures, further studies await future researchers' endeavors.

Moreover, this study adopts cross-sectional research design. Such design cannot rule out the possibility of successful firms own richer resources so that they can better align KM strategy with other contextual variables. We suggest future researchers to adopt longitudinal research design to deal with such causality issue.

Note

1. The relationships between corporate strategy and individual items of KM strategy were also tested by one-way ANOVA. They all attain statistical significance and results are shown in the Appendix – Table AII. Similar examination of KM and HRM strategy was also reported in the Appendix – Table AII.

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Appendix

	Eight questions related to corporate strategy using Likert Scale from 1 (highly disagree) to 5 (highly agree)
1.	We put out goods or services with low cost
2.	We tailor-make goods or services to fit the needs of particular clientele
3.	We put out innovated products or services frequently
4.	We put out full range of products or services to satisfy broad range of customers
5.	Our products or services enjoy technological lead compared to that of our competitors'
6.	Our products or services are to satisfy the needs of specialized market niches
7.	Our customers compose only a small portion of the broad clientele
8.	Our customers are small in number compared to the potential clientele on the whole market
	Eleven questions related to HRM strategy
1.	We recruit innovative employees with high technical standards
2.	We seldom lay off employees
3.	We have clear and definite job definitions
4.	We provide extensive trainings to workers
5.	Our promotion decisions are mainly based on performance and not on seniority
6.	We rotate jobs among employees to familiar them with their colleagues' works
7.	Our performance appraisal is mainly used as a developmental tool
8.	Workers are encouraged to participate in decision-making
9.	Employees' compensation relate primarily to their rank in the company
10.	Compensation is tightly connected to employee's performance
11.	We have plans to let workers become owners of our company
	Twelve questions related to KM strategy
1.	We use computer as the major mode of knowledge transfer
2.	Much of our operating knowledge can be codified and stored in database
3.	We deal with similar problems in our daily operations
4.	Our operating knowledge is highly linked with person
5.	We invest heavily on IT infrastructure
6.	We have a company directory of experts, so that workers can access the right person for needed information
7.	We transfer workers among departments often
8.	Our company has a culture encouraging interactions among employees
9.	Our company's reward system encourages knowledge transfer among workers
10.	A considerable portion of our training programs involves interactions among employees
11.	We have many chances to reuse operating information frequently

Table AI.
Questionnaire items related to corporate strategy, HRM strategy, and KM strategy

	Corporate strategy		HRM strategy	
	Cost leadership, $n = 64$ $(\bar{x})$	Differentiation, $n = 83$ $(\bar{x})$	Buy-bureaucratic, $n = 70$ $(\bar{x})$	Make-organic, $n = 77$ $(\bar{x})$
1. Computer as major mode of knowledge transfer	2.80 (0.91)	3.30** (1.11)	2.77 (1.00)	3.36** (1.04)
2. Degree of codification	2.69 (0.92)	3.33*** (0.81)	2.77 (0.94)	3.30*** (0.83)
3. Deal with similar problems repetitively	2.88 (1.05)	3.53** (1.00)	2.99 (0.97)	3.48* (1.11)
4. Knowledge linked to person	2.61 (0.88)	3.05** (1.07)	2.60 (0.91)	3.09** (1.05)
5. Infrastructure investment	2.75 (0.91)	3.19* (1.11)	2.77 (0.97)	3.21* (1.08)
6. Company directory of experts	2.80 (0.86)	3.18* (1.14)	2.77 (0.92)	3.23** (1.10)
7. Personnel transfer	2.72 (0.93)	3.37*** (1.07)	2.77 (0.94)	3.38*** (1.09)
8. Interactive culture	2.66 (0.82)	3.24*** (1.03)	2.70 (0.91)	3.25** (0.99)
9. Incentive systems reward worker interactions	2.75 (0.89)	3.37*** (1.04)	2.81 (0.95)	3.36** (1.02)
10. Training mode	2.70 (0.87)	3.13* (1.07)	2.66 (0.92)	3.21** (1.02)
11. Frequency of information reuse	2.63 (0.92)	3.64*** (0.91)	2.79 (0.93)	3.38*** (0.99)
12. Information reused on different problems	2.52 (0.91)	3.17*** (1.06)	2.51 (0.88)	3.22*** (1.07)

Notes: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.10$ (*F*-test, one-way ANOVA)

Table AII. Means and standard deviations for KM strategy per item broken down by corporate strategy and HR strategy

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