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The Knowledge Management Strategic Alignment Model (KMSAM) and Its Impact on Performance: An Empirical Examination

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1. Introduction

Recently, firms have started to realize the importance of the information technology (IT) for effective KM activities (Alavi & Leidner, 2001) or interorganizational learning facilitating (Scott, 2000). It is found that the high coalignment quality of KM and IT (i.e., their high-high fit) achieved high KM performance and satisfaction than those whose quality fitted low (Sher & Lee, 2004). More specifically, effective KM project alone can’t lead to success without the support of IT (Kim, 2001; Sabherwal & Sabherwal, 2005); IT alone also can do nothing without good KM initiatives (Kim, 2001) in attaining KM success thus leads to organizational performance (Bhatt & Grover, 2005). Accordingly, the strategic alignment between KM and IT with other resources or strategies must be considered for business performance (Asoh, 2004). However, their high-high fit doesn’t always yield positive organizational outcomes since enough exceptions are found to indicate that business strategy and knowledge strategy (e.g., Asoh, 2004), as well as human resource management strategy (e.g., Shih & Chiang, 2005) are interdependent.

It has been realized that research regarding the integrated investigation of various strategies is not sufficient. Furthermore, the analysis and design of the organization as a whole is critical to achieve efficient organizational benefits. In the practical terms, the basic alignment mechanism is “strategy”, and it is though that a match between strategy and organization is the key driven to effectiveness at realizing intended strategies. Therefore, this study focused on three types of strategies discussed above that are critical to business in today’s knowledge-based organizations, namely knowledge management (KM) strategy, information technology (IT) strategy, and human resource management (HRM) strategy. We posit that performance constructs including growth and profitability are affected by strategic alignment bilaterally among these strategies.
2. Theoretical background: Alternative perspectives of alignment (or fit)

The concept of alignment (or fit) is a key issue in structural contingency theory (Drazin & Van de Ven, 1985). Its commonly basic proposition is that "organizational performance is a consequence of fit between two or more factors; such as, the fit between organization environment, strategy, structure, system, style, and culture (Van de Ven & Drazin, 1985). In this study, the terminology of fit and its concept are analogous with the term of strategic alignment. According to (Venkatraman, 1990), fit has three approaches: selection, interaction, and systems approaches; whereas six different perspectives are proposed by Venkatraman (1989): matching, moderation, mediation, gestalts, covariation, and profile deviation. The six perspectives can be classified into two categories according to the number of variables being simultaneously examined. Accordingly, fit as matching, moderation, and mediation can be categorized into the reductionistic perspective, whereas fit as gestalts, covariation, and profile deviation can be regarded as holistic perspective (Venkatraman, 1990).

3. Research model and hypotheses

3.1 Strategic alignment between KM strategy and IT strategy (H1)

The other main purpose of the present research project is to develop a KM strategic alignment model (KMSAM) in the strategy-related MIS area. Consistent with the perspectives mentioned earlier, the emerging body of literature on KM depicts strategic alignment or congruence among properties of KM, units, relationships, and environment leading to better organizational performance and better KM and IT outcomes than those achieved when alignments are misfit. Additionally, the relative effectiveness of the type varies with context. In this vein, we describe the reductionistic-level (or bivariate-level) model briefly, so as to provide a rationale for the more detailed discussion about the underlying meanings of KM strategic alignment that follows.

The rapid progress of IT provides a good solution to answer the question: why does a KM project alone not always lead to enhanced business performance when firms overlook its links to other resources? That is, firms with excellent IT capabilities allow them to cope with the present competitive and dynamic environment well (Blatt & Grover, 2005). Accordingly, strategic IT management has been regarded an enabler in business performance, when it fits with certain aspects of the KM context, helping companies to survive in the highly-competitive business environment (Alavi & Leidner, 2001). IT also is regarded to be a critical enabler for KM (Alavi & Leidner, 2001). Choosing the right ITs for different KM strategies is critical for organizations (Kim, 2001). Using various IT solutions to comply with KM strategy will contribute to the creation of corporate knowledge directories, via knowledge mapping or the building of knowledge networks. Therefore, the relationship between KM strategy and IT strategy is highly relevant. Meanwhile, according to Asoh (2004), as an enabler for KM and IM/IS, IT strategy serves as the delivery-oriented component that must be aligned with KM strategy to improve organizational performance. In the past, a few scholars have developed conceptual models that attempt to describe how organizations can match different technologies to their KM practices, in order to achieve firm value (Abou-Zeid, 2003; Sabherwal & Sabherwal, 2005). The basic notion of these models is that a proper fit and alignment between technology and KM in an organization...
will result in high performance. In the context of the KM development environment, higher KM capability requires a high quality of IT relatedness, which, in turn, depends upon how well their relationships have been modeled (Sher & Lee, 2004; Tanriverdi, 2005; Tippins & Sohi, 2003). That is, an organization’s KM strategy should provide direction in determining how IT can support knowledge activities within the organization.

IT strategies can be classified into two general categories: IT environment scanning and strategic use of IT (Bergeron et al., 2004). System KM strategy requires IT tools that allow for explicit knowledge to be formalized and articulated in documents, and shared electronically through IT infrastructures such as intranets. In this manner, organizations should invest in an extensive IT system to codify knowledge. Therefore, a firm’s IT strategy should focus on paying more attentions to strategic use of IT internally, in order to improve the quality and quantity of electronic repositories or databases.

In contrast, human KM strategy draws upon interpersonal relationships to exchange and share tacit knowledge across the organization. Thus, firms need a moderate investment in IT to connect experts in the organization. The technologies may include an e-mail system, online discussion networks, videoconferencing, and other collaborative tools (Scheepers et al., 2004). A firm’s IT strategy, therefore, should aim at scanning the external IT environment, searching for communication tools and other interactive technologies to support person-to-person knowledge-sharing in organizations.

Accordingly, IT strategies vary depending upon KM strategies. Hence, the following hypotheses are proposed:

H1: The strategic alignment between KM strategy and IT strategy has a positive direct effect on business performance, as measured in growth and profitability

H1-1a: The strategic alignment between human KM strategies and IT strategies for IT environment scanning has a positive direct effect on business performance, as measured in growth.

H1-1b: The strategic alignment between human KM strategies and IT strategies for IT environment scanning has a positive direct effect on business performance, as measured in profitability.

H1-2a: The strategic alignment between human KM strategies and IT strategies for the strategic use of IT has a positive direct effect on business performance, as measured in growth.

H1-2b: The strategic alignment between human KM strategies and IT strategies for the strategic use of IT has a positive direct effect on business performance, as measured in profitability.

3.2 Strategic alignment between KM strategy and HRM strategy (H2)

Classifying KM strategies into centralized and de-centralized, which are analogous to the perspectives of ‘people-to-document’ and ‘people-to-people’ approaches, respectively, a case study of 4 international consulting firms with different models and KM strategies was conducted by Grolik et al. (2003). They asserted that with a centralized KM approach to training programs, the implementation of an incentive system for successful use of the knowledge repository was the important HR technique; whilst in a de-centralized KM strategy, a ‘peer-group feedback’ system for sharing implicit knowledge was the focus. The recruiting policies that such a strategy employ involve seeking out candidates who either
fall into a skill portfolio defined in terms of knowledge goals or have outstanding skills and experience in related domains. Furthermore, mentors or coaches and suitable rotation programs are ways to structure a de-centralized policy well. Again, it has been found that both of these KM strategies are considered to have high correlations with human resource flow, employee training, and reward systems. Additionally, according to Hansen et al. (1999), different KM strategies should reflect different drivers of their human resources. In the system KM strategy, adequate HR policies consist of hiring persons who are well suited to the reuse of knowledge and the implementation of solutions, training people in groups and through computer-based distance learning, and rewarding people for using and contributing to document databases. Additionally, with the human KM strategy, suitable HR policies are hiring persons who like problem-solving and can tolerate ambiguity, training people via one-on-one mentoring, and rewarding people for directly sharing knowledge with others. Therefore, both system and human KM strategies highlight the importance of recruitment and selection of employees (HR flow), training and development employment security, teams and job redesign control (work systems), and reward systems. Furthermore, Shih and Chiang (2005) also assert that a satisfactory HRM strategy, that is the HR flow of hiring or promoting politics and training programs, the work systems of tasks and assignment, and reward systems of wage level and appraisal, should be compatible with KM strategy to optimize organizational performance. Therefore, we contend that a certain degree of alignment must exist between KM strategy and HRM strategy. Hence, the following hypotheses are proposed:

H2: The strategic alignment between KM strategy and HRM strategy has a positive direct effect on business performance, as measured in growth and profitability.

H2-1a: The strategic alignment between human KM strategies and HRM strategies for HR flow has a positive direct effect on business performance, as measured in growth

H2-1b: The strategic alignment between human KM strategies and HRM strategies for HR flow has a positive direct effect on business performance, as measured in profitability.

H2-2a: The strategic alignment between human KM strategies and HRM strategies for work systems has a positive direct effect on business performance, as measured in growth.

H2-2b: The strategic alignment between human KM strategies and HRM strategies for work systems has a positive direct effect on business performance, as measured in profitability.

H2-3a: The strategic alignment between human KM strategies and HRM strategies for reward systems has a positive direct effect on business performance, as measured in growth.

H2-3b: The strategic alignment between human KM strategies and HRM strategies for reward systems has a positive direct effect on business performance, as measured in profitability.

H2-4a: The strategic alignment between system KM strategies and HRM strategies for HR flow has a positive direct effect on business performance, as measured in growth.

H2-4b: The strategic alignment between system KM strategies and HRM strategies for HR flow has a positive direct effect on business performance, as measured in profitability.
H2-5a: The strategic alignment between system KM strategies and HRM strategies for work systems has a positive direct effect on business performance, as measured in growth.
H2-5b: The strategic alignment between system KM strategies and HRM strategies for work systems has a positive direct effect on business performance, as measured in profitability.
H2-6a: The strategic alignment between system KM strategies and HRM strategies for reward systems has a positive direct effect on business performance, as measured in growth.
H2-6b: The strategic alignment between system KM strategies and HRM strategies for reward systems has a positive direct effect on business performance, as measured in profitability.

Consequently, the reductionistic perspective of the strategic alignment model between KM strategy and IT strategy, and between KM strategy and HRM strategy is proposed and illustrated in Fig. 1. Because of their mutual reinforcement, and serving as the basis for business performance, we will conduct a bivariate analysis (Drazin & Van de Ven, 1985) to verify the specific dimensions of interest.

Fig. 1. A reductionistic perspective of strategic alignment

4. Research methodology

4.1 Sample characteristics
The characteristics of the sample are described as follows. The largest number of respondents is from the manufacturing industry, representing 57.1% of the responding companies. Most of companies have 100 to 499 employees (37.9%). Approximately 60.2% of the respondents have experiences more then 6 years.

4.2 Hypotheses testing
The actually patterns of the alignment were been assessed by matching approach. It is used to specify the various functional forms between any two related variables. As Venkatraman (1989) stated, the most common technique used when adopting the matching perspective is the deviation score model (Hoffman et al., 1992), which has been used with great success by
many researchers (e.g., David et al., 1989; Lai, 1999). We employed a deviation scores approach as our fit assessment method. Meanwhile, according to Venkatraman (1989), the underlying premise of deviation score analysis is that the “absolute difference between the standardized scores of two variables indicates a lack of fit” (p. 431). In this vein, fit or lack of fit is presented by one independent variable being subtracted from another.

To operate this method, in practice, the deviation score is entered into regression equations and the performance implications of fit are tested by examining the impact that this difference score variable has on performance. The regression equation would be written as follows:

\[ Y = \alpha_0 + \alpha_1X + \alpha_2Z + \alpha_3(|X - Z|) + e \]  

If the coefficient \(\alpha_3\) is statistically significant, then the hypothesis, regarding the performance effects of fit, is supported (Venkatraman, 1989).

To minimize bias in the scaling of questionnaire items, the item scores first were standardized using Z scores prior to computation of the difference scores. SPSS was used to run linear hierarchical regression analyses. Therefore, the hierarchical procedure required that the independent variables were entered into the regression model in a specific order. In our study, the performance factor initially was regressed on KM strategy. Next, the two IT strategy variables were added to access their incremental contribution to the performance factor. Third, the two HRM strategy variables were entered into the equation. Finally, the KM-IT and KM-HRM strategic alignment (fit) variables were added to the previous regression equation, to test firm performance.

The results of hierarchical regression analyses are presented in Table 1. The importance of a given independent variable as a predictor of performance is indicated by a \(\Delta R^2\) symbol, representing the increment in unique variance it explains. Model 1 contains all variables, including fit variables, in the equation; this model demonstrates that system-HR flow fit \((\beta = -.33, p < .01)\), system-work systems fit \((\beta = -.19, p < .1)\), system-reward systems fit \((\beta = -.27, p < .01)\), human-reward systems fit \((\beta = -.23, p < .05)\), system-strategic use of IT fit \((\beta = -.20, p < .05)\), and human-IT environment fit \((\beta = -.17, p < .05)\) all are significant determinants (adjusted \(R^2 = 0.34, F\)-value = 5.85, \(p < .001\)) of business growth. Furthermore, the value of \(\Delta R^2 = 0.11\) in step 4 of Model 1 is higher than that of step 3 \(\Delta R^2 = 0.08\), demonstrating higher explanatory power of variances of the various fit variables on growth.

In step 4 of Model 2, system-HR flow fit \((\beta = -.20, p < .1)\), system-work systems fit \((\beta = -.18, p < .1)\), and system-strategic use of IT fit \((\beta = -.18, p < .05)\) were found to have significant impacts on profitability (adjusted \(R^2 = 0.34, F\)-value = 5.93, \(p < .001\)). Furthermore, the value of \(\Delta R^2 = 0.10\) in step 4 of Model 1 is larger than that of step 3 \(\Delta R^2 = 0.08\), demonstrating more explanatory power of the variances of the various fit variables on profitability.

5. Discussion and conclusions

In summary, the reductionistic perspective, using the approach of fit as matching, definitely recognizes the bivariate patterns of impact upon business performance. The results show that the firms which are good at aligning IT strategy and HRM strategy with KM strategy demonstrating a high performance level. Observing their relationships in more detail, some of the fit patterns show a significant direct effect on growth or profitability. Hence, firms
must employ the right IT and HRM practices with the right KM strategies. In other words, successful firms that use a system-oriented (codification) KM strategy utilize extensive selection and training procedures and have relatively high job security in their HR flow practices; compensation and promotion decisions tend to be tightly connected to employees’ work performance; these companies generally use broadly defined jobs with enriched design; they utilize team-based work organization; and they usually rotate jobs among employees to familiarize them with their colleagues’ work. All this is done to ensure that the reused codified knowledge can store abundant expertise derived from different employees. Furthermore, firms that use system-oriented (codification) KM strategies focus their IT strategies on strategic use of IT, meaning that they not only collect operational knowledge to connect people with reusable codified knowledge, they also focus on generating large overall revenues.

The results of hierarchical regression analyses are presented in Table 1. The importance of a difference score variable has on performance. The regression equation would be written as

\[ Y = \alpha_0 + \alpha_1 X + \alpha_2 Z + \alpha_3 (|X - Z|) + e \]

The independent variables were entered into the regression model in a specific order. In step 1 of Model 1, system-HR flow fit (β = -.20, p < .1) was added to the previous variables, in the equation; this model demonstrates that system-HR flow fit (β = -.20, p < .1) was found to have significant impacts on profitability (adjusted R² = 0.34, F-value = 5.85, p < .001). Furthermore, the value of IT env. scan. (-0.01, p < .01), human-reward systems fit (β = -.23, p < .05), system-strategic use of IT fit (β = -.20, p < .05), system-work systems fit (β = -.19, p < .1), system-reward systems fit (β = -.27, p < .01), and system-strategic use of IT fit (β = -.18, p < .05) were found to have significant effects on fit, is supported (Venkatraman, 1989). The regression equation would be written as

\[ Y = \alpha_0 + \alpha_1 X + \alpha_2 Z + \alpha_3 (|X - Z|) + e \]

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<table>
<thead>
<tr>
<th>Variables</th>
<th>Growth (Model 1)</th>
<th>Profitability (Model 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KM strategy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>0.17+</td>
<td>0.11</td>
</tr>
<tr>
<td>Human</td>
<td>0.33***</td>
<td>0.28**</td>
</tr>
<tr>
<td><strong>IT strategy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT env. scan.</td>
<td>-0.01</td>
<td>-0.04</td>
</tr>
<tr>
<td>Str. use of IT</td>
<td>0.14</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>HRM strategy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR Flow</td>
<td>0.32**</td>
<td>0.26</td>
</tr>
<tr>
<td>Work systems</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Reward systems</td>
<td>0.03</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Strategic alignment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-HR fit</td>
<td>-0.33**</td>
<td></td>
</tr>
<tr>
<td>S-work fit</td>
<td></td>
<td>-0.19+</td>
</tr>
<tr>
<td>S-reward fit</td>
<td></td>
<td>-0.27**</td>
</tr>
<tr>
<td>H-HR fit</td>
<td></td>
<td>-0.13</td>
</tr>
<tr>
<td>H-work fit</td>
<td></td>
<td>-0.12</td>
</tr>
<tr>
<td>H-reward fit</td>
<td></td>
<td>-0.23*</td>
</tr>
<tr>
<td>S-ITE fit</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>S-SUIT fit</td>
<td></td>
<td>-0.20*</td>
</tr>
<tr>
<td>H-ITE fit</td>
<td></td>
<td>-0.17*</td>
</tr>
<tr>
<td>H-SUIT fit</td>
<td></td>
<td>-0.03</td>
</tr>
</tbody>
</table>

| R² | 0.21 | 0.22 | 0.30 | 0.41 | 0.21 | 0.23 | 0.31 | 0.41 |
| ΔR² | 0.01 | 0.08 | 0.11 | | 0.02 | 0.08 | 0.10 | |
| F | 10.88*** | 9.57*** | 5.85*** | 21.53*** | 11.46*** | 12.07*** | 5.93*** | |
| ΔF | 20.76*** | 9.57*** | 5.85*** | 2.56** | 1.30 | 9.19*** | 2.41** | |
| Adjusted R² | 0.20 | 0.20 | 0.27 | 0.34 | 0.20 | 0.21 | 0.32 | 0.34 |
| D.W. | 11.84 | 11.84 | | | | | |

Notes: 1. Standardized regression coefficients are shown. *p<.1; **p<.05; ***p<.01; ****p<.001
On the other hand, firms that use human-oriented (personalization) KM strategies must have reward systems that encourage workers to share knowledge directly with others; instead of providing intensive training within the company, employees are encouraged to develop social networks, so that tacit knowledge can be shared. Such companies focus on ‘maintaining’ not ‘creating’ high profit margins, and on external IT environment scanning, supporting the latest technologies, so as to facilitate person-to-person conversations and knowledge exchange.

Contrary to our expectation, neither human-HR flow fit nor human-work systems fit have found to have a significant impact on performance in terms of both growth and profitability. That is, when human KM strategy is adopted, only the strategic alignment between human KM strategy and reward systems of HRM strategy is found to have a significant impact on business performance in terms of growth. One possible explanation may be that the strategy a firm used on knowledge sharing in human KM strategy is mainly by members’ face-to-face conversation in private. The informal dialogues between organizational members are just encouraged through appraisal and compensation systems related to tacit knowledge sharing, accumulation, and creation. No matter how much training about the jobs a firm offered to their employees, or how often the employees rotated to another jobs, the person-to-person social network for linking people to facilitate conversations and exchange of knowledge would never be diminished.

6. References


This study is funded by the Taiwan National Science Council under project number NSC97-2410-H-366-006
This book is a compilation of writings handpicked in esteemed scientific conferences that present the variety of ways to approach this multifaceted phenomenon. In this book, knowledge management is seen as an integral part of information and communications technology (ICT). The topic is first approached from the more general perspective, starting with discussing knowledge management’s role as a medium towards increasing productivity in organizations. In the starting chapters of the book, the duality between technology and humans is also taken into account. In the following chapters, one may see the essence and multifaceted nature of knowledge management through branch-specific observations and studies. Towards the end of the book, the ontological side of knowledge management is illuminated. The book ends with two special applications of knowledge management.

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