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Procedia - Social and Behavioral Sciences 229 (2016) 126 – 132

Procedia
Social and Behavioral Sciences

5th International Conference on Leadership, Technology, Innovation and Business Management

Importance of Strategic Flexibility on the Knowledge and Innovation Relationship: An Emerging Market Study

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Abstract

This study seeks to explore the impact of strategic flexibility on the relationship between knowledge management and innovation performance. In order to achieve this, a self- administrated questionnaire was conducted on a sample of 187 firms from different industries in Turkey and a couple of hypotheses were tested. The two way interaction of knowledge management and strategic flexibility was associated more strongly with innovation performance than the direct and single relationship of knowledge management and innovation performance. Therefore, it was found that the effectiveness of knowledge management leading to innovation performance is contingent on strategic flexibility.

Keywords: Strategic flexibility, Knowledge management, Innovation, Emerging markets

Peer-review under responsibility of the International Conference on Leadership, Technology, Innovation and Business Management

1. Introduction

Over the past two decades, knowledge and innovation performance relationship has remained an important subject of inquiry in innovation research. Scholars and practitioners in the field commonly agreed that effective knowledge management was a source of superior innovation performance (Bogner and Bansal, 2007; Yayavaram and Chen, 2015).

Despite the insightful findings of previous research that tested the direct influence of knowledge management on innovation performance, empirical studies examining the effects of contextual variables on this relationship have been rare (Sirmon et al., 2011; Anderson, Potočnik and Zhou, 2014). Hence, the complex interactions of different contextual factors and mechanisms on the way of creating innovation performance still remain opaque in innovation research (Rosing, Frese and Bausch, 2011; Anderson, Potočnik and Zhou, 2014). Without a thorough analysis of these interactions which have a certain explanatory power, innovation performance related issues in organizations cannot be understood (Sirmon et al., 2011; Bridoux, Smith and Grimm, 2013). Firms operate in dynamic environments and they should dynamically reconfigure their resource portfolio to leverage their knowledge management skills for innovation performance (Garg, Walters and Priem, 2003; Sirmon, Hitt and Ireland, 2007; Sirmon et al., 2011). The leverage and

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Peer-review under responsibility of the International Conference on Leadership, Technology, Innovation and Business Management
doi:10.1016/j.sbspro.2016.07.121

deployment of knowledge management skills may be contingent on the firms' management capability of other resources (Sirmon et al., 2011; Bridoux, Smith and Grimm, 2013). According to the dynamic capabilities (DC) view, firms can adapt to a dynamic environment by building resource flexibility and coordination flexibility as the sub-components of strategic flexibility (Matthyssens, Pauwels and Vandenbempt, 2005; Zhou and Wu, 2010; Wu and Chen, 2014) and the effects of strategic flexibility can be a determining factor on organizational performance. Therefore, this study aims to explore the moderating role strategic flexibility on the relationship between knowledge management skills and innovation performance.

2. Literature Review and Hypotheses Development

In recent years, based on the propositions of the DC view, the focal point of strategy research has been management of strategic resources effectively since a firm's ability to acquire, bundle, deploy and develop resources through capabilities is more important than static resource endowments in driving organizational performance (Teece, 1998; Maritan and Peteraf, 2011; Sirmon, Hitt and Ireland, 2007; Sirmon et al., 2011). Maritan and Peteraf (2011) suggest that organizational performance "arises from differential complementarities between a resource and firms' existing resource portfolio and capabilities" (p. 1380).

Since firms compete by deploying bundles of complementary resources, the effectiveness of a resource or a number of resources is contingent on the firms' capabilities (Teece, 1998; Sirmon, Hitt and Ireland, 2007). Similarly, effectiveness of a capability may also be contingent to another organizational capability (Sirmon, Hitt and Ireland, 2007). Especially in high velocity environments, effective deployment of productive resources can be achieved through integration of multiple capabilities (Eisenhardt and Martin, 2000; Peteraf, Stefano and Verona, 2013). Zahra et al. (2006) found that the low knowledge transfer capability of firms was the consequence of another low dynamic capability – a deficient problem-solving capacity in the face of change. Sirmon, Gove and Hitt (2008) state that multiple capabilities are needed to compete effectively and management of scarce resources should be the utmost concern of managers. From this point of view, innovation performance hinges on the efficiency and effectiveness of the knowledge-based capabilities interacting with other complementary resources and capabilities (Zhou and Wu, 2010). Interaction effects of resources and capabilities on performance outcomes may differ due to the contingent effect of context (Simon, Gove and Hitt, 2008).

In Turkey, like in other emerging markets, firms operate in a business environment where rapid economic growth, political instability, investor heterogeneity (as a result of offering different information sets to different investors), high level of uncertainty, financial volatility and risk, less transparency and legal frameworks allowing opportunism, corruption and rent shifting dominate the whole market (Hoskisson et al., 2000; Nowak-Lehmann et al., 2007). Moreover, with the effect of the diverse ethnic demographic structure and the differences between western and eastern consumers in terms of income and education levels, the market is quite heterogeneous. Hence, the Turkish and foreign firms must deal with a high variety of market segments along with rapid and discursive consumer shifts that may emerge as a consequence of divergent income distribution and low education levels of consumers (Cavusgil, Ghauri and Akcal, 2013).

In turbulent environments, effective knowledge management skills along with strategic flexibility which "allows firms to respond quickly to dynamic and unstable environmental changes by committing resources to new courses of action, and recognize and act promptly when it is time to halt or reverse existing resource commitments" (Liu et al., 2013, p. 82) may enhance the innovation performance of firms significantly (Zhou and Wu, 2010; Wei, Yi and Guo, 2014).

Strategic flexibility does not only enable firms to dynamically manage their resources for adapting to high velocity environments, but it can also help firms achieve the full potential of their key resources (Zhou and Wu, 2010; Wei, Yi and Guo, 2014). Strategic flexibility deals with the flexible use of resources and reconfiguration of processes, so, strategic flexibility can be achieved through resource flexibility and coordination flexibility (Matthyssens, Pauwels and Vandenbempt, 2005; Zhou and Wu, 2010). Whilst resource flexibility refers to "the capabilities to accumulate flexible resources with multiple uses", coordination flexibility refers to "the capabilities to create new resource combinations through an internal coordination process" (Wei, Yi and Guo, 2014, p. 835). Strategic flexibility may influence innovation performance of a firm in different ways. Studies (Argote, McEvily and Reagans, 2003; Garriga, Krogh and Spaeth, 2013) have shown that organizations suffer from several organizational constraints that impede the creation, transfer, integration and application processes of knowledge. The resources are not abundant and a firm's ability to create new knowledge depends on learning from inside and outside sources (Levinthal and March, 1993).

Given the condition of resource scarcity, the current resources of firms that are intensely bounded to specified

targets make difficult for firms to employ them for other courses of actions (Wei, Yi and Guo, 2014). In this situation where resource flexibility is low, it may be too difficult and costly for firms to find complementary resources. On the contrary, firms with high resource flexibility can use other resources more easily for new purposes and the time along with the cost spent for switching one resource to another may decrease (Matthyssens, Pauwels and Vandenbempt, 2005; Wei, Yi and Guo, 2014). For example, a firm that seeks to create new knowledge or exploit existing knowledge to enhance its innovativeness in an ambiguous business environment may be constrained by the lack of appropriate IT-based technological capabilities or highly-skilled employees.

As a result, it may need to commit additional resources or change existing investment in exchange for future development of "searching and processing new knowledge beyond the domain of neighborhood knowledge and embarking on a broader level of exploration" (Zhou and Wu, 2010, p. 551). Therefore, knowledge exploration and exploitation capacity of the firm can be increased through the extended resource pool. But, this can only be achieved if the firm has a high level of resource flexibility that facilitates availability of new resources for new knowledge and new technologies at a lower risk and cost during the new product development process (Zhou and Wu, 2010; Wei, Yi and Guo, 2014). Flexibility in resource allocations and product designs helps firms to adapt new technologies and increase number of the new product configurations significantly (Worren, Moore and Cardona, 2002).

Apart from ensuring flexibility in resource allocations, strategic flexibility also serves as an "organizing principle for structuring and coordinating various resources and functional units" (Zander and Kogut, 1995, p. 79). Routine and structural inertia were identified as the constraints especially on the transfer, share and application of knowledge that impact innovation performance negatively (Gilbert, 2005; Garriga, Krogh and Spaeth, 2013). In dynamic product markets, firms may need to reconfigure their production processes quickly, break routine inertia that obliges firms to standardization, and change the hierarchical organizational structure where knowledge transfer across levels is limited and less space is left for employees to be creative (Gilbert, 2005; Zhou and Wu, 2010; Wei, Liu and Herndon, 2011). A high level of coordination flexibility may enable firms to build, transfer and integrate new knowledge rapidly by relaxing routine and structural inertia which helps firms break down their knowledge and institutionalized technological processes and explore new alternatives (Gilbert, 2005; Wei, Yi and Guo, 2014).

Coupled with such flexible mechanisms, firms are more likely to purposefully create, extend or modify their knowledge-base which enables firms to process their knowledge in the most effective way that leads to superior innovation performance in dynamic environments. However, strategic flexibility may not affect a firm's innovation output by itself. Rather, it may enhance the value of existing knowledge management skills when used in combination. In this sense, strategic flexibility can be deemed as a kind of complementary organizational capability that can help firms achieve the full potential of their knowledge stocks and knowledge management skills resulting to better innovation performance (Zhou and Wu, 2010).

Therefore, we suggest that:

H_1: Knowledge management skills are significantly associated with innovation performance, and

H_2: Strategic flexibility plays a moderating role on the relationship between knowledge management skills and innovation, such that knowledge management skills are associated with better innovation performance.

3. Methodology

3.1. Sample and Data Collection

Data for this research were obtained through a survey. The sample was selected from the database of Istanbul Chamber of Industry (ISO) that announced the largest 1,000 firms of Turkey (ISO-1000) from different sectors annually. This sample which was designed for multiple research purposes was the best available and relevant sample that could be obtained in Turkey. Moreover, availability of detailed updated databases with respect to Turkey as an emerging market was lacking and this database also included the valid names and e-mails of senior-level executives along with the contact addresses of these firms. Although the sampling method chosen seems to be convenient sampling that has sometimes been criticized about its inadequacy to represent entire population and creation of biased samples (Saunders et al., 2007), this sample comprises nearly all prominent firms competing in a variety of industries in the Turkish business environment. Because the unit of analysis in this study is at the firm level, a single informant was used and the questionnaire was mailed to only one executive from each firm. A total of 187 useable questionnaires were obtained yielding a response rate of 18.7%.

3.2. Measurement Instrument

A self-administrated survey questionnaire that consists of four construct categories that are knowledge management skills, strategic flexibility, and innovation performance constructs along with an additional control variables category was used as the measurement instrument. To account for the effects of extraneous variables, firm age, firm size and industry structure were controlled. The questionnaire was consisted of a total number of 32 questions: 12 questions to measure the performance effects of knowledge management skills (Alavi and Leidner, 2001; Wu and Chen, 2014), 9 questions for strategic flexibility (Zhou and Wu, 2010; Wei, Yi and Guo, 2014), 3 questions for innovation performance (Terziovski, 2010), 5 questions to control the effects of industry structure factors (Porter, 1980), and 2 questions for the demographics (age and size). And the last question aimed to categorize the primary business activity of the firms. Some sample questions from the measurement instrument are as follows:

Knowledge management:
Our firm has capability to share relevant knowledge among business units.
Our firm has capability to develop knowledge from internal and external knowledge sources.
Environmental dynamism:
Environmental changes in our local market are intense.
The technology in this industry is changing rapidly.
Our clients regularly ask for new products and services.
Strategic flexibility:
There is a large range of alternative uses to which our major resources can be applied.
The difficulty of switching from one use of our major resources to an alternative use is low.
The firm often finds new resources and/or new combinations of existing resources.

Responses to the items were recorded on a 5-point Likert-type scale and reliability and validity issues were assessed. The constructs that had alpha values equal to and above 0.70 were accepted as reliable constructs (Nunnally and Bernstein, 1994). The reliability analyses show that all constructs possess satisfactory Cronbach's alpha values: knowledge management skills (α=0.893), strategic flexibility (α=0.854), innovation performance (α=0.891), and industry structure (α=0.848).

Moreover, correlations between variables were examined to assess the presence of multicollinearity. Independence of the predictor variables is important since highly correlated independent variables can predict each other and may cause problems with multicollinearity which influence the accuracy of the regression analysis negatively (Saunders, Lewis and Thornhill, 2007). So, inter-correlations between variables were examined (Table 1). Moderate levels of correlations that were below 0.80 did not seem to create multicollinearity problem (Saunders, Lewis and Thornhill, 2007).

Table 1. Inter-correlation matrix

Variables	Mean	SD	1	2	3	4	5	6	VIF
1. Firm size	311.64	285.37	1.00						1.067
2. Firm age	28.41	24.17	.09	1.00					1.184
3.Industry structure forces	3.74	.75	-.03	-.02	1.00				1.149
4.Knowledge management skills	4.06	.63	.08	.04	.16***	1.00			1.255
5.Strategic flexibility	3.85	.68	-.09	-.05	.21*	.29**	1.00		1.349
6.Innovation performance	3.73	.77	.05	.06	.02	.38***	.32**	1.00	1.172

*p<.05; **p<.01; ***p<.001 (two-tailed)

3.3. Analyses

Multiple regression analyses were used to analyze the data. A four-step hierarchical analysis was conducted. In hierarchical regression method, each set of independent variables is entered into separate blocks for analysis and the incremental changes of the R^2 statistic and the β coefficients are calculated. The control variables were first entered and then knowledge management skills (KMS) variable was entered in the second step. Having entered the strategic

flexibility (SF) variable in the third step, the interaction term of knowledge management skills and strategic flexibility (KMS x SF) was entered in the fourth step to predict innovation performance (Table 2).

Table 2. The results of regression analyses

	Innovation performance			
Predictors	*Model 1*	*Model 2*	*Model 3*	*Model 4*
1. Firm age	.052	.044	.035	.049
2. Firm size	.074	.067	.079	.061
3.Industry structure forces	-.036	.023	-.034	.037
4.Knowledge management skills		.311**	.159**	.145**
5.Strategic flexibility			.208***	.196**
6. Knowledge management skills X Strategic flexibility				.472*
R^2	.093	.186	.265	.403
ΔR^2	-	.093	.172	.231
F- value	1.469	2.138**	2.572**	3.004*

N=187

*p<.05; **p<.01; ***p<.001 (two-tailed)

4. Results

The results of regression analyses are given in Table 2. In Model 1, just the control variables, including firm age, firm size and industry structure factors which explained no significant share of the variance in innovation performance were entered. In Model 2, KMS was added and a positively significant relationship between KMS and innovation performance was found ($\beta = .311^{**}$, $p < .01$). Therefore, H_1 is supported. Strategic flexibility was entered in Model 3, a significant effect on innovation performance was also observed ($\beta = .208^{***}$, $p < .001$).

In testing the moderation effects in Model 4, the joint effect of KMS and SF was significant on innovation performance ($\beta = .472^{*}$, $p < .05$). R^2 changes were also significant for innovation performance. Hence, based on the β coefficients and significant R^2 changes, H_1 and H_2 were confirmed.

5. Discussion and Conclusion

This research seeks to extend our understanding on how strategic flexibility as a contextual factor can affect the relationship between knowledge management and innovation performance of firms. The results show that strategic flexibility makes the positive linkage between KMS and innovation performance stronger. Strategic flexibility promotes the flexible use and coordination of resources to support knowledge management skills and quick decision making thereby enables firms to assimilate and use new information better, create more new product configurations and move readily to new markets (Matthyssens, Pauwels and Vandenbempt, 2005; Zhou and Wu, 2010). In this sense, strategic flexibility makes the positive impact of knowledge stronger on innovation performance by shifting or optimizing the use of other resources on the way of supporting knowledge management skills.

Thus, strategic flexibility "appears to be one type of dynamic capability that enables firms to achieve the potential of their knowledge management skills" (Zhou and Wu, 2010, p. 558). This finding was consistent with the obligation of Turkish firms to increase the speed and scope of their strategic maneuvering actions through a high level of strategic flexibility in the turbulent business environment where most of the firms could survive by finding idiosyncratic solutions to unpredicted and unexpected problems, adopting new alternative strategies, or modifying the existing ones. When all dynamic capabilities worked together, a stronger synergy resulting to better performance was created. This finding is consistent with the proposition of dynamic capabilities view which suggests that the efficacy of a dynamic capability is contingent to the availability and flexibility of other resources and capabilities and thereby through the synergistic effects that emerge as a result of the complex interactions of resources and capabilities, new

resource bundles can be created for better firm performance. As a result, this study found that the effectiveness of knowledge process capabilities leading to innovation performance in highly dynamic markets were contingent to another dynamic capability that was strategic flexibility.

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