

The Environmental Dynamism, Dynamic Capabilities and Marketing Innovation of Fertiliser Firms in Vietnam

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The focus of strategic management literature has shifted from factors that influence firm performance, to factors that underlie superior or innovation-based performance. Views of dynamic capabilities better explain this. This research fills an important paucity in dynamic capabilities and innovation research, by empirically relating dynamic capabilities; namely marketing knowledge management capability, innovation process management capability, and organisational learning capability, and marketing innovation of fertiliser firms in Vietnam, with environmental dynamism as a moderator. Drawing support from Dynamic Capability View (DCV), six hypotheses were postulated and tested using quantitative approach and cross-sectional design. In total 411 questionnaires were personally administered to owners/managers of fertiliser firms in Vietnam. A valid response of 54.9% was achieved. Data was analysed using statistical package for social sciences (SPSS) version 24. A relationship between marketing knowledge management capability and marketing innovation were found. However, the relationship between innovation process management capability and marketing innovation, and organisational learning capability and marketing innovation, was not supported statistically. Interestingly, the moderating effect of environmental dynamism on the relationship between the three dynamic capabilities and marketing innovation were supported. The research has contributed to the literature, and practical and theoretical implications as well as suggestions for future research were provided.

Key words: *Dynamic capabilities, marketing innovation, environmental dynamism, fertiliser firms, Vietnam.*

Introduction

For quite some time, the focus of strategic management literature has shifted from factors that influence firm performance, to factors that underlie superior or innovation-based performance. The literature established that the dynamic capabilities view (DCV) was introduced to complement the Resource-Based View (RBV) and explain factors underlying superior or innovation-based performance and competitive advantage, by developing core capabilities to sense changes in the environment, shape business processes and seize opportunities, and integrate capabilities to recombine, transform and reconfigure tangible and intangible resources (Barrales-Molina, Montes, & Gutierrez-Gutierrez, 2015). Researchers generally relate innovation to marketing innovation (i.e., the introduction of new marketing strategies) (Gunday, Ulusoy, Kilic & Alpkın, 2011). With dynamic capabilities, business firms can outperform competitors, recognise opportunities in external environments, assemble resources and develop routines and processes to obtain positive results (Froehlich, Bitencourt & Bossle, 2017). Business firms can ultimately grow, advance and survive through distributing resources across alternatives, adaptation, and responding to environmental turbulence (Albort-Morant, Leal-Millán & Cepeda-Carrión, 2016). Nevertheless, the concept of dynamic capabilities is contentious (Karna et al., 2015), because of its differential performance outcome (Tepic, Fortuin, GM Kemp & Omta, 2014), and paradoxical influence (Ricciardi, Zardini & Rossignoli, 2016). However, the combined influence of these dynamic capabilities on marketing innovation by fertiliser firms in Vietnam is yet to be empirically investigated. This suggests the need to test moderating effects, and examine wider sets of dynamic capabilities, on a specific aspect of innovation performance of fertiliser firms in Vietnam. Notwithstanding, there is only limited literature about how environmental dynamism moderates the relationships between marketing knowledge management capability, innovation process management capability, organisational learning capability and the marketing innovation of fertiliser firms in Vietnam.

Theory and Hypotheses

Dynamic Capability View

DCV is rooted in the first and second models of dynamic capabilities developed by Teece et al. (1997) and Teece (2007). The model succinctly described dynamic capabilities using the following typologies: (a) routines, resources, skills, processes, assets and capabilities; (b) rapid changes in the environment; (c) the capacity to modify, reconfigure, build, integrate, change and combine organisational resources; and (d) competitive advantage. Dynamic capabilities found business strategies and the regeneration or combination of resources into capabilities (Albort-Morant et al., 2016). Teece (2014) categorised capabilities into dynamic capabilities and ordinary capabilities. Dynamic capabilities are the capacity to combine, reconfigure and transform resources into operational or ordinary capabilities, to alter company processes, product or the creation of new ordinary capabilities. In sum, dynamic capabilities are the

capacities of companies to regenerate, recombine or reconfigure resources into new operational capabilities, and sit foundations that support strategy, to continue to adapt, grow, advance, evolve and ultimately survive (Albort-Morant et al., 2016). Therefore, this research filled an important paucity in the literature by empirically investigating the relationship between marketing knowledge management capability, innovation process management capability, organisational learning capability and marketing innovation, with environmental dynamism as a moderator in the context of fertiliser firms in Vietnam.

Marketing Knowledge Management Capability and Marketing Innovation

Marketing knowledge management is a dynamic capability that is synonymous with integrating or seizing capability (Zhou et al., 2017), as well as absorptive capacity (Daspit et al., 2016). Likewise, the marketing knowledge management capability construct has been related to knowledge accumulation capability (Forés & Camisón, 2015); market knowledge competence (Ozkaya et al., 2015); stakeholder knowledge management capability (Kazadi et al., 2016); and market exploration and exploitation (Vorhies, Orr & Bush, 2011). Nevertheless, this study relates marketing knowledge management capability, to absorptive capacity, a notion suggested by Daspit et al. (2016). Therefore, marketing knowledge management as a dynamic capability, using the absorptive capacity argument, better explains how firms reconfigure their resources and capabilities to facilitate innovation and gain competitive advantage in the changing business environment (Daspit et al., 2016; Kazadi et al., 2016). This study assumed that marketing knowledge management capability can innovate the marketing of fertiliser firms in Vietnam. The following hypothesis is postulated:

H1 There is a positive relationship between marketing knowledge management capability and marketing innovation

Innovation Process Management Capability and Marketing Innovation

Innovation process management capability is synonymous with sensing capability (Froehlich et al., 2017), as scholars have related the construct innovation process quality (Tepic et al., 2014), innovation project management (Eveleens, 2010), and innovation process (Parthasarthy & Hammond, 2002). However, this study conceptualises innovation process management capability according to Parthasarthy and Hammond (2002). Prior studies have positively related innovation process management capability to innovation (Froehlich et al., 2017), innovation process quality and innovation project performance (Tepic et al., 2014), and innovation process and innovation performance (Parthasarthy & Hammond 2002). This study expects that innovation process management capability can innovate fertiliser firm marketing in Vietnam. The following hypothesis is postulated:

H2 There is a positive relationship between innovation process management capability and marketing innovation

Organisational Learning Capability and Marketing Innovation

Organisational learning capability is a dissection of many dynamic capabilities models (Wang & Shi, 2011). Consequently, the construct has been related to integrative capability (Gupta et al., 2014), and learning capability (Pavlou & El Sawy, 2011). Hence, organisational learning capability involves managerial commitment to learning, and culture of systems perspective and openness and experimentation (Nwankpa & Roumani, 2014). Prior studies have positively related organisational learning and perceptual innovation performance (Zhou, Hu & Shi, 2015), organisational learning capability and marketing innovation (Camisón & Villar-López, 2011), and learning with market and marketing innovation (Storbacka & Nenonen, 2015). This study assumed that organisational learning capability can foster marketing innovation of fertiliser firms in Vietnam. Thus, the following hypothesis is postulated:

H3 There is a positive relationship between organisational learning capability and marketing innovation

Environmental Dynamism as Moderator

Jiao, Alon, Koo and Cui (2013) defined environmental dynamism as environmental changes that an enterprise faces in realising innovation dreams. García-Zamora, González-Benito and Muñoz-Gallego (2013) established that environmental dynamism positively influenced the marketing innovation performance of SMEs. Yet, the literature is limited on the effects of environmental dynamism, as moderating variable on the relationship between marketing knowledge management capability, innovation process management capability, organisational learning capability and marketing innovation. Drawing support from the literature, it is assumed that the inclusion of environment dynamism as a moderator into the dynamic capabilities and innovation model can better explain the conditions within which independent variables foster the marketing innovation of fertiliser firms in Vietnam. Thus, the study postulated the following hypotheses:

H4 Environmental dynamism moderates the relationship between marketing knowledge management capability and marketing innovation

H5 Environmental dynamism moderates the relationship between innovation process management capability and marketing innovation

H6 Environmental dynamism moderates the relationship between organisational learning capability and marketing innovation

Methodology

Sampling and Data Collection Procedure

This research adopted a systematic probability technique in selecting 411 fertiliser firms in Vietnam. Based on this, 411 survey questionnaires were personally distributed to 411 owners/managers of fertiliser firms in Vietnam. Through these methods, a valid response rate of 54.9% was achieved, and 226 questionnaires were successfully completed and returned. However, 163 questionnaires or 39.7% were not successfully retrieved. Also, 23 questionnaires equivalent to 5.6% were excluded from the data analysis. The research data was analysed using 'statistical package for social sciences' (SPSS) version 24, considering that it is suitable for data screening and preliminary analysis, to establish clean and normal data, satisfy basic assumptions of multiple regression and determine goodness of instruments (Pallant, 2011); and run multiple and hierarchical regression analysis to determine cause-and-effect relationships (Paura & Arhipova, 2012).

Results

From the multiple regression results, marketing knowledge management capability, innovation process management capability and organisational learning capability explained a 24% variance in marketing innovation. As depicted in table 1, marketing knowledge management capability has a positive significant relationship with marketing innovation ($\beta = 0.387$, t-value 4.981, $p < 0.01$). To the contrary, innovation process management capability has no significant relationship with marketing innovation ($\beta = 0.096$, t-value 1.223, $p > 0.05$). Yet, organisational learning capability has no significant relationship with marketing innovation ($\beta = 0.094$, t-value 1.518, $p > 0.05$). Based on the result, H1 is supported. But H2 and H3 were not statistically supported.

Table 1: Multiple Regression Results

Independent variables	Unstandardised Coefficients	Standardised Coefficients	t-value	Sig.
	B	Beta		
(Constant)	1.476		5.889	.000
Marketing knowledge management capability	.396	.387***	4.981	.000
Innovation process management capability	.085	.096	1.223	.222
Organisational learning capability	.080	.094	1.518	.131

*** significant at 1% ($p < 0.01$)

According to the hierarchical regression result, at step 1, marketing knowledge management capability explained a 22.4% variance in marketing innovation. But, at step 2, the inclusion of environmental dynamism explained additional variance of 2.9% in marketing innovation. Likewise, at step 3, the inclusion of an interaction term explained an additional 2.5% variance of marketing innovation. As depicted in table 2, at step 1, the relationship between marketing knowledge management capability and marketing innovation is positive and significant ($\beta = .477$, t-value 8.124, $p < 0.01$). Equally, at step 2, environmental dynamism exerts a significant positive effect, on the relationship between marketing knowledge management and marketing innovation ($\beta = .185$, t-value 2.953, $p < 0.01$). Similarly, at step 3, the moderating effect of environmental dynamism on the relationship between marketing knowledge management capability and marketing innovation is positive and significant ($\beta = .183$, t-value 2.757, $p < 0.01$).

Table 2: Hierarchical Regression Results

	Independent variables	Std. Beta	t-value	Sig.	R ²	R ² Change	F-Change
Step 1	Marketing knowledge management capability	.477***	8.124	.000	.228	.228	65.999
Step 2	Marketing knowledge management capability	.404	6.438	.000			
	Environmental dynamism	.185***	2.953	.003	.257	.029	8.722
Step 3	Marketing knowledge management capability	.355	5.522	.000			
	Environmental dynamism	.122	1.844	.067			

	Interaction term	.183***	2.757	.006	.281	.025	7.600
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*** significant at 1% ($p < 0.01$)

Equally, the hierarchical regression shows that, at step 1, innovation process management capability explained 14.3% variance of marketing innovation. While, at step 2, the inclusion of environmental dynamism into the model explained an additional 4.7% variance of marketing innovation. Likewise, at step 3, the inclusion of the interaction term explained an additional 4.8% variance in marketing innovation, which were all significant at 0.01 level of significance. As depicted in table 3, at step 1, the relationship between innovation process management capability and marketing innovation is positive and significant ($\beta = .378$, t-value 6.103, $p < 0.01$). Also, at step 2, environment dynamism exerts a positive and significant effect on the relationship between innovation process management capability and marketing innovation ($\beta = .235$, t-value 3.616, $p < 0.01$). Moreover, at step 3, a positive and significant moderating effect of environmental dynamism on the relationship between innovation process management capability and marketing innovation is statistically established ($\beta = .250$, t-value 3.759, $p < 0.01$).

Table 3: Hierarchical Regression Results

	Independent variable	Std. Beta	t-value	Sig.	R ²	R ² Change	F-Change
Step 1	Innovation process management capability	.378***	6.103	.000	.143	.143	37.243
Step 2	Innovation process management capability	.289	4.438	.000			
	Environmental dynamism	.235***	3.616	.000	.190	.047	13.076
Step 3	Innovation process management capability	.221	3.357	.001			
	Environmental dynamism	.160	2.404	.017			
	Interaction term	.250***	3.759	.000	.239	.048	14.130

*** significant at 1% ($p < 0.01$)

As depicted in table 4, at step 1, organisational learning capability has a positive and significant relationship with marketing innovation ($\beta = .237$, t-value 3.659, $p < 0.01$). Equally, at step 2, environmental dynamism exerts a positive and significant effect on the relationship between organisational learning capability and marketing innovation ($\beta = .322$, t-value 3.990, $p < 0.01$). Correspondingly, at step 3, when the model includes the interaction term, the moderating effect of environmental dynamism on the relationship between organisational learning capability and marketing innovation is statistically positive and significant ($\beta = .165$, t-value 2.629, $p < 0.01$).

Table 4: Hierarchical Regression Results

	Independent variable	Std. Beta	t-value	Sig.	R ²	R ² Change	F-Change
Step 1	Organisational learning capability	.237***	3.659	.000	.056	.056	13.387
Step 2	Organisational learning capability	.035	.435	.664			
	Environmental dynamism	.322***	3.990	.000	.119	.063	15.917
Step 3	Organisational learning capability	.042	.531	.596			
	Environmental dynamism	.292	3.626	.000			
	Interaction term	.165***	2.629	.009	.146	.027	6.910

*** significant at 1% ($p < 0.01$)

Discussion

As expected, the research findings showed a positive significant relationship between marketing knowledge management capability and marketing innovation. This suggests that fertiliser firms in Vietnam that have adequate marketing knowledge management capabilities acquire more knowledge resources from the market environment, share marketing knowledge resources among employees, and respond to the dynamics of the business environment by applying or transforming the assimilated, reconfigured or recombined marketing knowledge resources into marketing innovation (Forés & Camisón, 2015; Teece, 2014). Thus, the marketing knowledge management capability construct is significant for marketing innovation among fertiliser firms in Vietnam.

Surprisingly, the research findings showed no significant relationship between innovation process management capability and marketing innovation. This suggests that the fertiliser firms in Vietnam have inadequate capabilities to integrate human resources (connect all segments of employees working in various units/departments), business partners (relate with R&D partners, suppliers and competitors), and information systems as an integration tool (to link with customers, suppliers and R&D partners), respond to the dynamics of the business environment, and also, leverage the existing resource through resources regeneration or recombination to foster marketing innovation (Froehlich et al., 2017)

Contrary to the research expectation, the findings demonstrated an insignificant positive relationship between organisational learning capability and marketing innovation. This is because fertiliser firms in Vietnam lack adequate capability to respond to business environment dynamics, and also cannot regenerate new knowledge and skills to boost marketing innovation

activities. The findings did not concur with studies that established a significant positive relationship between organisational learning capability constructs such as learning, and market and marketing innovation (Storbacka & Nenonen, 2015), as well as organisational learning processes and innovation (Zhou et al., 2015; Sok & O'cass, 2011). Hence, the owners/managers of fertiliser firms in Vietnam have low perceptions of organisational learning capability, and cannot adequately support organisational learning agendas that reconfigure or recombine learning resources into new knowledge and skills, to foster competitiveness and marketing innovation.

Interestingly, the research findings demonstrate that environmental dynamism positively and significantly moderates the relationship between marketing knowledge management capability and marketing innovation, innovation process management capability, and marketing innovation, on the one hand, and organisational learning capability and marketing innovation on the other hand. This suggests that the success of marketing innovations of fertiliser firms in Vietnam, in relation to marketing knowledge management capability, innovation process management capability and organisational learning capability, is enhanced by environmental dynamism. The findings concur with previous studies that established a positive and significant moderating influence of environmental dynamism on the relationship between the research's constructs (Muddaha et al., 2018). Hence, owners/managers of fertiliser firms in Vietnam have the perception that changes and challenges in the environment are opportunities to develop resource regeneration, and transformation and recombination capabilities, to foster marketing innovation of their enterprises.

Conclusion

As expected, H1 on the relationship between marketing knowledge management capability, and marketing innovation, is statistically supported. Surprisingly, the research lacks statistical support for H2 and H3, on the relationship between innovation process management capability and marketing innovation, as well as on the relationship between organisational learning capability and marketing innovation. Interestingly, H4, H5 and H6 were statistically supported. They described the moderating effect of environmental dynamism on the relationship between marketing knowledge management capability and marketing innovation, innovation process management capability and marketing innovation, as well as organisational learning capability and marketing innovation.

The findings suggest that for fertiliser firms in Vietnam to enhance marketing innovation, sound marketing knowledge management capability is crucial. Similarly, the findings suggest that in the dynamic business environment, the three sets of dynamic capabilities influenced the marketing innovation of fertiliser firms in Vietnam. The research contributed to literature, but it has several limitations. First, the model was investigated in the Vietnam context. Second, the



research adopted a quantitative and cross-sectional design. Thus, future research may investigate the model in a different context, using qualitative or mix-mode, as well as a longitudinal research design or case study. Also, future research may examine how a different construct or dimensions of environmental dynamism (technology and market dynamism) moderate the model.



REFERENCES

- Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: A model of learning and capabilities. *Journal of Business Research*, 69(11), 4912-4917.
- Barrales-Molina, V., Montes, F. J. L., & Gutierrez-Gutierrez, L. J. (2015). Dynamic capabilities, human resources and operating routines: A new product development approach. *Industrial Management & Data Systems*, 115(8), 1388-1411.
- Camisón, C., & Villar-López, A. (2011). Non-technical innovation: organizational memory and learning capabilities as antecedent factors with effects on sustained competitive advantage. *Industrial Marketing Management*, 40(8), 1294-1304.
- Daspit, J. J., D'Souza, D. E., & Dicke, L. A. (2016). The Value-Creating Role of Firm Capabilities: Mapping Relationships among Absorptive Capacity, Ordinary Capabilities, and Performance. *Journal of Managerial Issues*, 28.
- Eveleens, C. (2010). Innovation management: A literature review of innovation process models and their implications. *Science*, 800(2010), 900.
- Forés, B., & Camisón, C. (2016). Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size?. *Journal of Business Research*, 69(2), 831-848.
- Froehlich, C., Bitencourt, C. C., & Bossle, M. B. (2017). The use of dynamic capabilities to boost innovation in a Brazilian Chemical Company. *Revista de Administração (São Paulo)*, 52(4), 479-491.
- García-Zamora, E., González-Benito, Ó., & Muñoz-Gallego, P. A. (2013). Organizational and environmental factors as moderators of the relationship between multidimensional innovation and performance. *Innovation*, 15(2), 224-244.
- Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of production economics*, 133(2), 662-676.
- Gupta, V. K., Dutta, D. K., & Chen, X. (2014). Entrepreneurial orientation capability and firm performance under conditions of organizational learning. *Journal of Managerial Issues*, 157-173.



Huang, K.-F., K.-H. Lin, L.-W. Wu, & P.-H. Yu. (2015). “Absorptive Capacity and Autonomous R&D Climate Roles in Firm Innovation.” *Journal of Business Research* DOI: 10.1016/j.jbusres.2014.05.002

Jiao, H., Alon, I., Koo, C. K., & Cui, Y. (2013). When should organizational change be implemented? The moderating effect of environmental dynamism between dynamic capabilities and new venture performance. *Journal of Engineering and Technology Management*, 30(2), 188-205.

Karna, A., Richter, A., & Riesenkauff, E. (2015). Revisiting the role of the environment in the capabilities–financial performance relationship: A meta-analysis. *Strategic Management Journal*. <http://dx.doi.org/10.1002/smj.2379>.

Kazadi, K., Lievens, A., & Mahr, D. (2016). Stakeholder co-creation during the innovation process: Identifying capabilities for knowledge creation among multiple stakeholders. *Journal of Business Research*, 69(2), 525-540.

Muddaha, G., Kheng, Y. K., & Sulaiman, Y. (2018). Impact of management capabilities and environmental dynamism on Nigerian SMEs marketing innovation performance. *International Journal of Management Research and Reviews*, 8(1), 20-35.

Nwankpa, J., & Roumani, Y. (2014). Understanding the link between organizational learning capability and ERP system usage: An empirical examination. *Computers in Human Behavior*, 33, 224-234.

Ozkaya, H. E., Droge, C., Hult, G. T. M., Calantone, R., & Ozkaya, E. (2015). Market orientation, knowledge competence, and innovation. *International Journal of Research in Marketing*, 32(3), 309-318.

Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS (4th ed.)*. Allen & Unwin: Australia.

Parthasarthy, R., & Hammond, J. (2002). Product innovation input and outcome: moderating effects of the innovation process. *Journal of engineering and technology management*, 19(1), 75-91.

Paura, L., & Arhipova, I. (2012). Advantages and Disadvantages of Professional and Free Software for Teaching Statistics. *Information Technology and Management Science*, 2012 /15, 9-14.

Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision sciences*, 42(1), 239-273.



Ricciardi, F., Zardini, A., & Rossignoli, C. (2016). Organizational dynamism and adaptive business model innovation: The triple paradox configuration. *Journal of Business Research*, 69(11), 5487-5493.

Schilke, O. (2014). Second-order dynamic capabilities: How do they matter?. *Academy of Management Perspectives*, 28(4), 368-380.

Sok, P., & O'Cass, A. (2011). Achieving superior innovation-based performance outcomes in SMEs through innovation resource–capability complementarity. *Industrial Marketing Management*, 40(8), 1285-1293.

Storbacka, K., & Nenonen, S. (2015). Learning with the market: Facilitating market innovation. *Industrial Marketing Management*, 44, 73-82.

Teece, D. J. (2014). The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *The Academy of Management Perspectives*, 28(4), 328–352.

Teece, D. J., & Leih, S. (2016). Uncertainty, innovation, and dynamic capabilities: An introduction. *California Management Review*, 58(Summer (4)), 5–12.

Tepic, M., Fortuin, F., GM Kemp, R., & Omta, O. (2014). Innovation capabilities in food and beverages and technology-based innovation projects. *British Food Journal*, 116(2), 228-250.

Vorhies, D. W., Orr, L. M., & Bush, V. D. (2011). Improving customer-focused marketing capabilities and firm financial performance via marketing exploration and exploitation. *Journal of the Academy of Marketing Science*, 39(5), 736-756.

Wang, Y., & Shi, X. (2011). Thrive, not just survive: enhance dynamic capabilities of SMEs through IS competence. *Journal of Systems and Information Technology*, 13(2), 200-222.

Zhou, S. S., Zhou, A. J., Feng, J., & Jiang, S. (2017). Dynamic capabilities and organizational performance: The mediating role of innovation. *Journal of Management & Organization*, 1-17.

Zhou, W., Hu, H., & Shi, X. (2015). Does organizational learning lead to higher firm performance? An investigation of Chinese listing companies. *The Learning Organization*, 22(5), 271-288.