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Exploring the role of dynamic capabilities in firm performance under the resource-based view framework

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ABSTRACT

This study investigates the role of dynamic capabilities in the resource-based view framework, and also explores the relationships among different resources, different dynamic capabilities and firm performance. Employing samples of top 1000 Taiwanese companies, the findings show that dynamic capabilities can mediate the firm's valuable, rare, inimitable and non-substitutable (VRIN) resources to improve performance. On the contrary, non-VRIN resources have an insignificant mediating effect. Among three types of dynamic capabilities, dynamic learning capability most effectively mediates the influence of VRIN resources on performance. Furthermore, the important role of VRIN resources is addressed because of their direct effects on performance based on RBV, as well as their indirect effect via the mediation of dynamic capabilities.

1. Introduction

The resource-based view (RBV) addresses that the accumulation of valuable, rare, inimitable and nonsubstitutable (VRIN) resources is the basis of enterprise competitiveness and economic rent (Barney, 1986; Dierickx & Cool, 1989; Peteraf, 1993). Newbert (2007a) also suggests that value and rare resources are related to competitive advantage and that competitive advantage is related to performance. Furthermore, Terziovski (2010) uses RBV analysis to demonstrate that the innovation strategy of small and medium enterprises resembles that of large firms. Consequently, accumulating VRIN resources to enhance competitive advantage has become fundamental academic and managerial strategic thinking.

Scholars of the dynamic-capability view (DCV) extend RBV to examine the influences of dynamic markets (Helfat & Peteraf, 2003). Teece, Pisano, and Shuen (1997) propose the concept of DCV to address the important role of capabilities to build, integrate and reconfigure resources to cope with the highly volatile environment. However, the changing industry environment has altered competitive foundations (Eisenhardt & Martin, 2000). Consequently, in situations involving dynamic and fast-changing environments, DCV explains firm competitiveness more effectively than RBV (Deeds, Decarolis, & Coombs, 2000; Eisenhardt & Martin, 2000; Makadok, 2001; Teece et al., 1997; Wu, 2010; Zahra, Sapienza, & Davidsson, 2006; Zollo & Winter, 2002; Zott, 2003).

DCV studies investigate the attribute, origination, process, influence, and contribution of the dynamic capabilities (Barreto, 2010; Helfat & Peteraf, 2009; Loasby, 2010; Narayanan, Colwell, & Douglas, 2009; Prange & Verdier, 2011; Teece, 2007; Wang & Ahmed, 2007; Zahra et al., 2006; Zhou & Li, 2010; Zollo & Winter, 2002; Zott, 2003) and most scholars believe that dynamic capabilities increase competitive advantage. Additionally, dynamic capabilities are regarded as a transformer for converting resources into improved performance. Wu (2007) thus demonstrates that dynamic capabilities mediate between entrepreneurial resources and performance.

Danneels (2011) investigates the last two decades in the history of Smith Corona, a typewriter company, to show how it tries to leverage existing resources, create new resources, access external resources, and release resources to adapt to the changing industrial environments. The resource alteration processes in Smith Corona also demonstrate how dynamic capability operates and also reveal the important roles of resources. Facing an increasing dynamic competitive environment, decision-makers guiding firm strategy must further explore the relationship between resources and dynamic capabilities to achieve precise resource allocation and dynamic capability development. However, when combining the RBV and DCV, strategic decisions become increasingly complex because the classification and selection of resources are both important. This study thus attempts to explore the role of dynamic

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capabilities under the RBV framework. That is, this investigation examines what types of resources are most crucial to be converted into performance through dynamic capabilities, and what types of dynamic capabilities have the strongest effect in mediating resources on performance. This study thus compensates for the lack of RBV and DCV in both theoretical and empirical senses and provides a clearer managerial direction for dealing with strategic decisions regarding resources and dynamic capabilities.

The remainder of this paper is organized as follows. Section 2 presents theoretical background and develops related hypotheses. Section 3 then outlines the study methodology, and Section 4 discusses the empirical results. Finally, Section 5 summarizes conclusions, discussions, limitations and future research directions.

2. Theory and hypothesis

2.1. Mediating effects of dynamic capabilities

Why do firms in the same industry perform differently? The resource-based view (RBV) of the firm (Zott, 2003) is the main framework that this study uses to address this question. Through the efforts of Rumelt (1984), Barney (1986), Dierickx and Cool (1989), and Grant (1991), the RBV has become the main reference in forming firm strategies. The core competence perspective developed by Prahalad and Hamel (1990), and the related competence-based competitive strategy (Heene & Sanchez, 1997) also conceptually resemble the RBV.

Firm RBV effectively explains how firms achieve competitive advantages, as well as how they can sustain them. Rumelt (1984) demonstrates that intra-industry differences in profits exceed inter-industry differences in profits and strongly suggests the importance of resources versus industry effects. From the perspective of firm internal organization, RBV conceptualizes firms as bundles of resources. Following decades of study, researchers have theorized that when firms possess VRIN resources, they can achieve sustainable competitive advantage by implementing fresh value-creating strategies that competing firms will have difficulty in duplicating (Acedo, Barroso, & Galan, 2006; Armstrong & Shimizu, 2007; Barney, 1986; Dierickx & Cool, 1989; Grant, 1991; Lockett, Thompson, & Morgenstern, 2009; Newbert, 2007b; Ray, Barney, & Muhanna, 2004; Wernerfelt, 1984).

Following the proposal of absorptive capability by Cohen and Levinthal (1990), combinative capabilities by Kogut and Zander (1992) and capabilities by Amit and Schoemaker (1993), Teece et al. (1997) propose dynamic capability to explain why some organizations are more successful than others in establishing competitive advantages in dynamic markets. Dynamic capabilities are also found to be conductive to long-term firm performance (Wang & Ahmed, 2007). Teece et al. (1997) suggest firms should build, integrate and reconfigure internal and external competitiveness to adapt to the volatile environment. Deeds et al. (2000) propose that high tech firms should cultivate their dynamic capabilities to innovatively create novel products to cope with a rapidly changing industry environment and global competition. Moreover, Eisenhardt and Martin (2000) consider dynamic capabilities as a process for integrating, re-allocating, acquiring and abandoning resources in response to market change. D'Aveni, Dagnino, and Smith (2010) also highlight the importance of dynamic adjustment capability for short-term competitive advantages to deal with a hyper-competitive environment, in which resources are difficult to obtain.

Using the approach of Teece et al. (1997), this investigation defines firm dynamic capabilities as the capabilities of a firm to integrate, learn and reconfigure internal and external resources. Internal resources generally represent the resources possessed by the firm itself, while external resources can be obtained through cooperative alliances and acquisitions (Bantham, Celuch, & Kasouf, 2003; Johnson & Sohi, 2003). Learning capability describes an organizational operation to create competitive advantages through a learning mechanism based on executive experiences and the absorption of external information and resources (Cohen & Levinthal, 1990). Additionally, a firm needs to reconstruct or transform existing resources to deal with competition and adapt to markets (Amit & Schoemaker, 1993).

VRIN resources, as Barney (1986) suggests, are main components of firm competitiveness, and recent studies of the mediating effect of dynamic capabilities further underline their importance. Wu (2007) shows that dynamic capabilities can act as mediating variables between resources and performance. Dynamic capabilities thus are considered a transformer for converting resources into enhanced performance. Because of the characteristics of VRIN resources, the dynamic capabilities can effectively extract the competitive combinations from them to improve firm performance. For example, a firm can develop innovative technology and improve its performance through learning from cooperative alliances. Similarly, based on the integration of specific proprietary know-how, a firm can obtain a larger return from developing new and competitive products. Jiang, Tao, and Santoro (2010) suggest that firms reconfigure resources and learn knowledge through managing their alliances to improve firm performance. Schildt, Keil, and Maula (2012) have also found that absorptive capability to learn through alliances enhances firm performance. Summarily, dynamic capabilities effectively mediate the VRIN resources to enhance performance.

Non-VRIN resources, such as real estate and financial capital of a firm, have less influence on firm performance than VRIN resources. Consequently, non-VRIN resources are not regarded as target resources in collection from RBV. Combined with RBV and DCV, the firm performance can result from not only from the direct effects of resources but also from the indirect effects of mediating by dynamic capabilities. The lack of influence of non-VRIN resources on firm performance may come from two suppositions, namely the ineffectiveness of resources themselves and the ineffectiveness of the mediation of dynamic capabilities. That is, for non-VRIN resources, the performance conversion of dynamic capability can be relatively weak owing to their failure to create competitive advantages.

H1a (strong form). Firm dynamic capabilities mediate the positive effect of VRIN resources on firm performance.

H1b (weak form). Firm dynamic capabilities mediate the positive effect of non-VRIN resources on firm performance.

2.2. Mediating effects of different dynamic capabilities

Research on dynamic capabilities has been expanded to include new product development (Deeds et al., 2000; King & Tucci, 2002; Majumdar, 2000; Petroni, 1998) and internationalization (Griffith & Harvey, 2001; Luo, 2000; Madhok & Osegowitsch, 2000). However, dynamic capabilities are not fully considered in investigating the contribution of different types of capabilities. Adopting the approach of Teece et al. (1997), this study divides dynamic capabilities into three types: dynamic integration, dynamic learning and dynamic reconfiguration capability.

Firm competence lies in the effective and efficient integration of internal and external resources (Aoki, 1990). Iansiti and Clark (1994) have found that knowledge integration capability positively affects firm performance when investigating the automobile and computer industry. The results indicate the contribution of the dynamic integration capability to performance improvement. Firm managers should consider the external industry and competitive environment to decide the operational strategy for integrating internal and external resources. Porrini (2004) shows that firm acquirers can gain resource exchange and integration know-how through successful alliance activities and thus improve their performance. The results provide an example to demonstrate how integration capability positively mediates value resources into improved performance.

King and Tucci (2002) find that integrating historical experiences in previous markets can increase the probability of success in new

market exploration. Deeds et al. (2000) also show that integrating industry related technology for new product development is a crucial dynamic capability for new biotechnology firms. H2: Firm dynamic integration capabilities mediate the positive effect of VRIN resources on firm performance.

Learning is a process of making firm operations more effective and efficient through repetition and review. For product development, learning capabilities allow firms to avoid repeating mistakes by using lessons based on past experiences, and also enable them to explore new knowledge and develop new products (Lubatkin, Simsek, Ling, & Veiga, 2006; Yalcinkaya, Calantone, & Griffith, 2007). Mody (1993) indicates that a firm can enhance its performance by learning new knowledge, concept and expertise through external cooperative alliances. In addition, learning orientation has also been found to improve innovative capability (Hult, Hurley, & Knight, 2004). Lavie (2006) suggests that a firm should modify its business direction through internal and external learning by changing, acquiring or discarding resources. Internal learning can be achieved through training, knowledge database maintenance and knowledge sharing program.

Additionally, by anticipating industrial knowledge learning seminars or communities, a firm can enhance its external learning capability. Through investigating international joint ventures in China, Fang and Zou (2010) also find that absorptive and learning capabilities play a key role in achieving high and balanced dependence between local and foreign parties. Based on the study of strategic alliances, Otto (2012) shows that an organization can learn knowledge to enhance its competitiveness based on alliance experiences. H3: Firm dynamic learning capabilities mediate the positive effect of VRIN resources on firm performance.

To deal with a rapidly changing industry environment, firm must re-assemble or transform internal and external resources (Amit & Schoemaker, 1993). However, firms must also develop a mover cost-effective process than competitors to reconfigure and transform their resources. As a result, reconfiguration capability is generally considered as a key dynamic capability for monitoring market and technology trends, and for timely responses through resource transformation (Teece et al., 1997).

Newbert (2005) indicates that the resource acquisition and reconfiguration capabilities are most important in the new firm formation process. Lavie (2006) also proposes a capability reconfiguration model to deal with the influence of technological changes. Zhou and Wu (2010) indicate that strategic flexibility, which stresses the flexible use and reconfiguration of resources, strengthens the positive effects of technological capability and thus improves firm performance. To deal with fast changing industrial environments, firms should rapidly respond to the market and competitors. Additionally, firms should efficiently and effectively communicate with their alliance network to create competitive advantages (Lavie, 2007). H4: Firm dynamic reconfiguration capabilities mediate the positive effect of VRIN resources on firm performance.

3. Methods

Given the exploratory nature of this study, constructs and measurements were established in two ways: first, for variables employed in previous studies, the measures were adopted as long as they could provide acceptable measurement quality with minor modifications in wording to increase their applicability to the Taiwanese context; second, for variables not employed in previous studies, this study developed operational measures based on previous conceptual studies and assessed content validity via interviews with seven CEOs and three scholars. The CEOs and scholars were convenience-sampled (Churchill & Brown, 2004) from EMBA students and faculty members of National Chengchi University, Taiwan.

This study used four constructs, including VRIN resources, non-VRIN resources, dynamic capabilities and performance. VRIN resources are measured using three items: specialized know how (Amit & Schoemaker, 1993; Leonard-Barton, 1992; Tsai & Ghoshal, 1998), firm reputation (Aaker, 1991; Deephouse, 2000; Gulati, 1998; Hitt, Bierman, Shimizu, & Kochhar, 2001; Obloj & Capron, 2011; Parkhe, 1993) and cooperative alliance experience (Alder & Kwon, 2002; Deephouse, 2000; Gulati, 1998; Hess & Rothaermel, 2011; Hitt et al., 2001). Non-VRIN resources are measured using three items: firm capital (Bhide, 1996; Chatterjee & Wernerfelt, 1991; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998), real estate property and equipments (Barney, 1991), all measured using seven-point Likert scales.

This study adopts integration, learning and reconfiguration to measure dynamic capabilities, and thus uses an approach that is based on the researches of Teece et al. (1997) and Eisenhardt and Martin (2000). Following discussion with seven CEOs, four seven-point semantic-differential scale measures of each capability were selected and listed in Table 1. As for traditional performance measurements, objective and subjective items are optional. Objective measurements, such as return on assets (ROA) (Delios & Beamish, 1999; Gomes & Ramaswamy, 1999; Kim, Hwang, & Burgers, 1989), return on sales (ROS) (Geringer, Tallman, & Olsen, 2000; Sambharya, 1995; Tallman & Li, 1996), return on equity (ROE) (Buhner, 1987; Han, Lee, & Suk, 1998; Qian, 1998) and growth rate of sales (Geringer et al., 2000; Kim et al., 1989), are the most commonly applied indexes. To prevent the high sensitivity to capital structures for ROE (Hitt, Hoskisson, & Kim, 1997), this study uses ROA to measure the performance (Hitt et al., 1997; Jung, 1991).

4. Analytical results

4.1. Sample and data collection

This study administered a questionnaire survey to CEOs and senior executives from the top 1000 companies in Taiwan as identified by Common Wealth Magazine. To assess the content validity of the survey

Table 1
Constructs and measures.

Constructs	Measures	Cronbach's alpha
VRIN resources	Firm specialized know-how is above the industry average	0.86
	Firm reputation is above the industry average	
	Firm cooperative alliance experience is above the industry average	
Non-VRIN resources	Firm capital is above the industry average	0.82
	Firm real estate property is above the industry average	
	Firm equipments are above the industry average	
Performance	Return of asset (ROA) in recent 3 years compared with the industry average	–
Dynamic capabilities	*Integration capabilities* (alpha = 0.85)	0.90
	Customer information collection and potential market exploration	
	Specialized organization to collect industry information for managerial decision.	
	Integrating industry related technologies to develop new products.	
	Recording and integrating historical methods and experiences in handling firm issues.	
	Learning capabilities (alpha = 0.93)	
	Frequent anticipating industrial knowledge learning program	
	Frequent internal educational training	
	Knowledge sharing and learning groups establishment	
	Frequent internal cross department learning program	
	Knowledge management database for access	
	Reconfiguration capabilities (alpha = 0.89)	
	Clear human resource re-allocation procedure	
	Rapid organizational response to market changes	
	Rapid organizational response to competitor's actions.	
	Efficient and effective communication with cooperative organization	

Table 2
Descriptive statistics: means, standard deviations and correlations.

	Mean	Std				
VRIN resources	5.43	1.11	1			
Non-VRIN resources	5.01	1.47	.705**	1*		
Dynamic capabilities	5.21	1.12	.725**	.450**	1	
Performance	4.79	1.22	.652**	.475**	.535**	1

** p<0.01.
* p<0.05.

items, survey questions were pre-tested and refined through application to convenience-sampled 20 CEOs selected using convenience sampling from among EMBA students of National Chenchi University (NCCU), Taiwan. The aim was to assess both the questionnaire and the administration process. The respondents were given one month to respond, and 19 complete responses were obtained. Ambiguities in the wording of the questionnaire were identified and clarified based on the subject responses. Overall the respondents exhibited no difficulty in understanding the questionnaire items or the instructions on completing and returning the questionnaire.

Respondents were re-contacted to confirm they had received the questionnaire and urged to return promptly (cf., Sivadas & Dwyer, 2000). Additionally, because the questions were related to the firm strategies, phone call confirmation was performed to ensure the respondents were indeed the targets. One-hundred and sixty-four firms responded from 1000 questionnaires distributed. After eliminating seven invalid ones, 157 effective questionnaires remained for further analysis, representing 5.7% return rate.

This study follows Kline (1998) in checking for missing data points, normality of the data distribution and outliers. This investigation uses mean substitution to deal with missing data (c.f., Edelman, Candida, & Manolova, 2005). To ensure data robustness, Mahalanobis distance is used to check for outliers. The Mahalanobis distance is between 0 and 1 for all observations, indicating that the data conforms to normality and the data set contains no problems with outliers (Kleinbaum, Kupper, & Muller, 1998).

The highest correlation coefficient (0.725) among constructs is that between VRIN resources and dynamic capabilities (Table 2), suggesting that all study constructs are conceptually and empirically distinct (c.f., Wang, Lo, & Yang, 2004). The Cronbach's alpha value for all four constructs exceeds 0.80, indicating acceptable reliability (Hair, Black, Babin, Anderson, & Tatham, 2006; Nunnally, 1978). The results also demonstrate that the data are uni-dimensional.

Additionally, this study employs analysis of variance (ANOVA) to identify differences in annual sales and number of employees between early and late respondents to measure non-response bias. ANOVA is used to ensure that the sampled firms are representative of the population (Armstrong & Overton, 1977). Responses returned within four weeks of first mailing were classified as early (n = 102), while those received after four weeks were classified as late (n = 55) (c.f., Mishra, Heide, & Cort, 1998). The ANOVA indicates no significant difference between the early and late response groups in annual turnover (p = 0.84) and number of employees (p = 0.90).

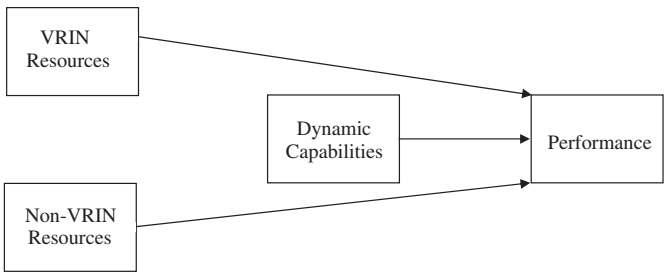

Fig. 1. The direct influence of resources and dynamic capabilities on performance.

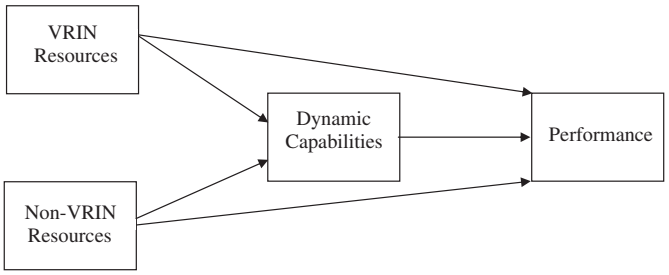

Fig. 2. The direct and indirect influences (mediating effect) of resources and dynamic capabilities on performance.

4.2. Mediating effects of dynamic capabilities

To capture the theoretical interdependencies between VRIN and non-VRIN resources, dynamic capabilities, and performance, this study analyzed the data based on structural equation modeling. Structural equation modeling is a particularly attractive choice for testing mediating variables since all of the relevant paths are directly tested and complications, such as measurement error and feedback, are incorporated directly into the model (Edelman et al., 2005; Venkatraman, 1989). This study then performed path analysis in LISREL for hypothesis testing (Bollen, 1989; Hair et al., 2006). Path analysis is common in studies where a small sample size limits the use of full structural equation models (c.f., Chaudhuri & Holbrook, 2001; Li & Calantone, 1998).

First, path model 1 shown in Fig. 1 which assumes the mediating effect of dynamic capabilities is examined. The analysis of collected data reveals the overall model fit of $\chi^2 = 122.32$ (d.f. = 4), p = 0.00, GFI = 0.85, AGFI = 0.19, RMSEA = 0.36, NFI = 0.70, TLI = −0.14, and CFI = 0.70. The numbers indicate inadequate model fit. As a result, the findings support path model 2 in Fig. 2 and assumes that dynamic capabilities exert a significant mediating effect besides the direct influence of resources and dynamic capabilities. The path analysis results reveal an adequate fit: $\chi^2 = 2.73$ (d.f. = 2), P = 0.26, GFI = 0.99, AGFI = 0.94, RMSEA = 0.048, NFI = 0.99, TLI = 0.99, and CFI = 1.00 as suggested by the literatures (Bollen, 1989; Hoyle & Panter, 1995; Hu & Bentler, 1995; Moore, 2005; Shook, Ketchen, Hult, & Kacmar, 2004).

Path analyses of model 1 and model 2 reveal a significant mediating effect of dynamic capabilities on performance. Consequently, this study further investigated the relationship between resources and dynamic capabilities and found that VRIN resources positively affect the development of dynamic capabilities (β = 0.82, t-value = 10.44), while non-VRIN resources have only an insignificant influence (β = 0.01, t-value = 0.18). This result supports H1a but not H1b. As for the relationship between the dynamic capabilities and performance, path analysis (β = 0.34, t-value = 3.41) indicates that dynamic capabilities can enhance firm performance. This finding also supports the suggestion of previous dynamic capability view studies. Combined with the influence of resources on dynamic capabilities and the effect of dynamic capabilities on performance, the results demonstrate that dynamic capabilities can mediate VRIN resources on performance and cannot mediate non-VRIN resources on performance (Table 3). Additionally, VRIN resources are found to significantly improve performance (β = 0.58, t-value = 4.76),

Table 3
Testing results.

Path	Coefficient	t-value
VRIN resources → dynamic capabilities	.82	10.44**
Non-VRIN resources → dynamic capabilities	.01	.18
Dynamic capabilities → performance	.34	3.41**
VRIN resources → performance	.58	4.76**
Non-VRIN resources → performance	.05	.63

** p<0.01.

Table 4
The mediating effect: integration, learning, and reconfiguration dynamic capabilities.

Model 1 (integration)		Model 2 (learning)		Model 3 (reconfiguration)	
Path	Coefficient (t-value)	Path	Coefficient (t-value)	Path	Coefficient (t-value)
Dynamic integration capability → performance	0.04 (0.54)	Dynamic learning capability → performance	0.16 (2.27**)	Dynamic reconfiguration capability → performance	0.10 (1.18)
VRIN resources → dynamic integration capability	0.86 (8.60**)	VRIN resources → dynamic learning capability	0.82 (7.67**)	VRIN resources → dynamic reconfiguration capability	0.84 (9.91**)
Non-VRIN resources → dynamic integration capability	−0.15 (−1.91**)	Non-VRIN resources → dynamic learning capability	−0.02 (−1.24)	Non-VRIN resources → dynamic reconfiguration capability	−0.13 (−1.99**)
VRIN resources → performance	0.66 (5.79**)	VRIN resources → performance	0.57 (5.22**)	VRIN resources → performance	0.61 (5.07**)
Non-VRIN resources → performance	0.00 (0.03)	Non-VRIN resources → performance	0.01 (0.10)	Non-VRIN resources → performance	0.01 (0.15)

** $p<0.01$.

while non-VRIN resources are found to have only an insignificant influence ($\beta = 0.05$, t-value = 0.63).

Fig. 2 shows that this study tests the mediating effects of three types of dynamic capabilities, including integration, learning and reconfiguration capabilities. Table 4 lists the results of path analysis. The analytical results show that overall model fit based on dynamic learning capability reveals that best fit among the three types occurs with $\chi^2 = 2.22$ (d.f. = 2), P = 0.33, GFI = 1.00, AGFI = 0.95, RMSEA = 0.026, NFI = 0.99, TLI = 1.00, and CFI = 1.00 (Bollen, 1989; Hoyle & Panter, 1995; Hu & Bentler, 1995; Moore, 2005; Shook et al., 2004). Furthermore, Table 4 reveals that H2 is valid, while H3 and H4 do not receive support.

5. Conclusion

5.1. Findings and discussion

This study applies RBV to discuss the mediating effect of dynamic capabilities on improved performance. Additionally, this study examines the effectiveness of mediating with respect to different dynamic capabilities. Analytical results demonstrate that VRIN resources can enhance firm performance and, while non-VRIN resources have only an insignificant influence. This finding regarding the relationship between performance and resources also supports the conclusions of previous studies (Barney, 1986; Dierickx & Cool, 1989; Grant, 1991; Ray et al., 2004; Wernerfelt, 1984). For the correlation of resources and dynamic capabilities, path analysis shows that VRIN resources positively affect the development of all three types (integration, learning, and reconfiguration) of dynamic capabilities. In contrast, non-VRIN resources do not significantly affect the development of dynamic capabilities. As RBV suggests, the analytical results also indicate that collecting VRIN resources can improve firm performance and VRIN resources can strengthen the development of dynamic capabilities, especially dynamic learning capability. Notably, non-VRIN resources cannot improve firm performance, and can even adversely affect the development of dynamic integration and reconfiguration capabilities.

The analytical results indicate that dynamic capabilities significantly mediate VRIN resources to improve firm performance. By accumulating VRIN resources and developing dynamic capabilities to mediate resources, firms can improve their competitive advantages and thus their performance. Consequently, the important role of VRIN resources is addressed because of their direct effects on performance based on RBV and their indirect effects mediated by dynamic capabilities from DCV.

Among three dynamic capabilities, dynamic learning capability has the most significant mediating effect. Therefore, for firms with VRIN resources, it is crucial to develop dynamic learning capability by creating a mechanism to absorb information and knowledge through iterative business practices (Cohen & Levinthal, 1990). Additionally, learning internally via human resource development programs or externally via strategic cooperative alliance is also critical for improving firm competence (Fang & Zou, 2010; Mody, 1993).

Combining RBV and DCV, the analytical results of this study demonstrate an integrated consideration of both resources and dynamic capabilities. The competitive advantages result not only from accumulation of VRIN resources, but also from the development of dynamic capabilities, particularly dynamic learning capability. The main question for firm managers thus becomes: what are the VRIN resources and what types of dynamic capabilities effectively mediate them in their competitive environments? That is, strategic management should consider RBV and DCV in combination, instead of separately.

5.2. Limitations and future research directions

The study is limited due to the use of perceptual data (Nakayama & Sutcliffe, 2005). Therefore, firm managers may be unable to identify managerial actions based on the study results. Additionally, the proposed measures of dynamic capabilities can be improved as more studies are performed in the future.

The fact that the survey data all come from a single country also limits the generalization of the study. As different classification of dynamic capabilities may yield different results, future studies based on different classification methods are needed. Furthermore, further investigations are urgently required to understand how dynamic learning capability is built owing to its crucial role in mediating resources on performance.

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