



Applicability of the resource-based and dynamic-capability views under environmental volatility

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ARTICLE INFO

Article history:

Received 1 September 2008

Received in revised form 1 January 2009

Accepted 1 January 2009

Keywords:

Resource

Dynamic capability

Environmental volatility

Competitive advantage

ABSTRACT

This study uses a group of informants and applies a step-by-step empirical process to examine the applicability of the resource-based view (RBV) and dynamic-capability view (DCV) to environmental volatility. Through examining 253 Taiwanese firms, this study finds that the explanatory power of DCV exceeds that of RBV in volatile environments. Firms that possess dynamic capabilities can effectively enhance their competitive advantages, despite facing highly volatile environments. Nevertheless, the RBV is effective in some ways and firms with valuable, rare, inimitable, and nonsubstitutable resources still possess competitive advantages. This article closes with theoretical and practical implications.

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1. Introduction

The resource-based view of the firm (RBV) influences the field of strategic management (Newbert, 2007; Priem and Butler, 2001). Researchers theorize that firms possessing resources that are valuable, rare, inimitable, and nonsubstitutable (i.e. resources with VRIN attributes) can achieve sustainable competitive advantage by implementing fresh value-creating strategies that are difficult for competitors to duplicate (Barney, 1986; Dierickx and Cool, 1989; Grant, 1991; Newbert, 2007; Ray et al., 2004; Uhlenbruck et al., 2006; Wernerfelt, 1984). Most empirical work on this area is consistent with the RBV (Barney and Arian, 2001). The RBV has become a crucial logical consideration in firm strategy development. Consequently, accumulating resources to foster competitive advantage or economic rent has become fundamental to strategic thinking for numerous managers and scholars.

Scholars of the dynamic-capability view (DCV) are extending RBV to dynamic markets (Helfat and Peteraf, 2003, 2007). These researchers doubt that the mere existence of appropriate bundles of specific resources is insufficient to sustain competitive advantage in situations involving rapid and unpredictable market change (Eisenhardt and Martin, 2000; Teece et al., 1997). Consequently, these researchers argue that *dynamic capability*, or the ability to integrate, build and reconfigure resources, is essential in learning competitive advantage under environmental volatility (Eisenhardt and Martin, 2000; Newbert, 2005; Rindova and Kotha, 2001; Teece, 2007; Teece et

al., 1997; Zollo and Winter, 2002). More specifically, most DCV research focuses solely on conceptual discussions (e.g., Deeds et al., 2000; Eisenhardt and Martin, 2000; Griffith and Harvey, 2001; Helfat and Peteraf, 2007; King and Tucci, 2002; Luo, 2000; Madhok and Osegowitsch, 2000; Majumdar, 2000; Makadok, 2001; Petroni, 1998; Rindova and Kotha, 2001; Teece, 2007; Teece et al., 1997; Zollo and Winter, 2002), and empirical studies are rare (e.g., Wu, 2006, 2007). Numerous concepts need examination and DCV needs further discussion. This empirical study attempts to clarify the applicability of DCV to environmental volatility.

This study applies comprehensive and step-by-step empirical procedures to research. Specifically, this study adopts the following empirical procedures: First, this study verifies the applicability of RBV by examining the relationship between resources and competitive advantages. Second, this study adds environmental volatility as a moderator to verify the applicability of RBV to highly volatile environments. Third, this study examines the relationship between dynamic capabilities and competitive advantages. Fourth, this study clarifies the applicability of DCV to dynamic environments using environmental volatility as a moderator.

Unlike previous works on RBV or DCV, this study simultaneously examines RBV and DCV. Most previous empirical studies on RBV or DCV verify either RBV or DCV only, and generally treat different verification topics separately. Accordingly, questions exist regarding whether informant selection was manipulated to obtain desired verification results. This study uses a single group of subjects, drawn from the Taiwan Hsinchu High Technology Industrial Park Council Science Industry Association Registry and the Taiwan Manufacturers Registry, to simultaneously test both RBV and DCV and prevent biased conclusions. Consequently, the study's content persuasively compensates for the lack of RBV and DCV in both theoretical and empirical senses.

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The remainder of this paper has the following organization. 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 presents conclusions and managerial implications.

2. Theory and hypotheses

2.1. Resource-based view

RBV is the dominant framework in the strategy literature (Newbert, 2007) attempting to explain performance differences among different firms in the same industry (Zott, 2003). Penrose (1959) proposes that sustained firm growth depends on internal firm characteristics, such as management capability and economy-of-scale in technological expertise. Wernerfelt (1984) proposes the concept of “resource position barrier” which inspires scholars to consider differentiating firm resources as sources of sustainable competitive advantage. Barney (1986), Dierickx and Cool (1989), Grant (1991), and Rumelt (1984) make RBV a crucial consideration in developing firm strategy. The core-competence perspective of Prahalad and Hamel (1990), and the competence-based competitive strategy of Heene and Sanchez (1997) are based on RBV and are key concepts in business strategy.

Rumelt (1984) demonstrates that intra-industry profit differences exceed inter-industry differences, suggesting that resources and internal firm organization are more important than industry effects. Researchers theorize that when firms possess resources that are VRIN, they can achieve sustainable competitive advantage by implementing new value-creating strategies that are difficult for competing firms to duplicate (Barney, 1986; Dierickx and Cool, 1989; Grant, 1991; Ray et al., 2004; Wernerfelt, 1984).

Most empirical findings are consistent with predictions of RBV, possibly because those studies do not involve subjects in contexts within highly volatile environments. For example, Ray et al. (2004) identifies a positive correlation between intangible, socially complex resources and customer service performance in the insurance industry. However, the insurance industry is less volatile than other industries (e.g., high-tech industries), and thus verification in existing studies using the RBV occurs in the absence of interference from environmental volatility. Therefore, scholars extend the RBV to dynamic or highly volatile markets (Eisenhardt and Martin, 2000; Teece et al., 1997).

Though the resource-based view does not necessarily imply a static research approach, researchers propose that adopting a dynamic view of resources is important (Helfat and Peteraf, 2003). Fluid consumer needs, uncertain technological developments, and competition characterize highly volatile markets (Chiou et al., 2002; Desarbo et al., 2005; Liu et al., 2005), and represent a rapidly shifting competitive landscape for firms (Eisenhardt and Martin, 2000). In such environments, the mere existence of appropriate bundles of specific resources is insufficient to sustain firm competitive advantage (Eisenhardt and Martin, 2000; Teece et al., 1997).

For example, though IBM pursues a resource-based strategy of accumulating technological assets and frequently adopting an aggressive intellectual property stance to protect its interests (Teece et al., 1997), its personal computer division (PCD) has long been inadequate. The Chinese computer manufacturer Lenovo Group, Ltd., completed its \$1.8 billion purchase of IBM's PCD in May 2005. Lenovo was established in 1984 in a modest one-story bungalow in Beijing, and is currently the third largest PC firm in the world, trailing to Dell, Inc., and Hewlett-Packard, Inc. One rational explanation is that unlike Lenovo, the PCD of IBM was unable to respond to environmental change despite its abundant resources.

Hypothesis 1a. Firm resources relate positively with firm competitive advantage.

Hypothesis 1b. High environmental volatility weakens the positive relationship between firm resources and competitive advantage.

2.2. Dynamic-capability view

Teece (2007) proposes that firms require dynamic capabilities to adapt to changing environments and shape the ecosystems they occupy. Zollo and Winter (2002) propose that dynamic capability is a learned and stable pattern of collective activity, through which organizations systematically generate and modify their operating routines to enhance their effectiveness. Dynamic capabilities enable firms to renew their competences to meet changing market requirements, and include the ability to integrate, learn, and reconfigure internal and external organizational skills and resources (Teece et al., 1997), or (1) to sense and shape opportunities, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and reconfiguring their intangible and tangible assets (Teece, 2007).

Dynamic capabilities are antecedent organizational and strategic routines that managers use to transform their resource base and develop new value-creating strategies (Grant, 1996; Pisano, 1994). Eisenhardt and Martin (2000) propose that dynamic capabilities can enhance existing resource configurations when pursuing long term competitive advantage. In nonlinear and unpredictable competitive landscapes, manager capabilities to “integrate, build, and reconfigure internal and external competencies to address rapidly changing environments” (Teece et al., 1997: 516) are sources for sustaining competitive advantage.

Dynamic capability is essential in identifying competitive advantage under environmental volatility (Eisenhardt and Martin, 2000; Newbert, 2005; Rindova and Kotha, 2001; Teece et al., 1997; Wu, 2007; Zollo and Winter, 2002). This proposition is antecedent to the suggestion that, regardless of degree of environmental volatility, dynamic capabilities represent an emerging and potentially integrative approach to understanding new sources of competitive advantage. Therefore, environmental volatility does not moderate the relationship between dynamic capabilities and competitive advantage.

Hypothesis 2a. Firm dynamic capabilities relate positively with firm competitive advantages.

Hypothesis 2b. A highly volatile environment does not weaken the positive relationship between firm dynamic capabilities and competitive advantage.

3. Methods

3.1. Survey development and administration

The survey questions were pre-tested and refined based on the opinions of eight experts, including five CEOs and three professors, to determine the content validity of the survey items. Following preliminary testing, a pilot study was conducted involving 32 firms to determine the efficacy of the questionnaire and administration process. Pilot sample members were given one month to respond, after which 21 completed questionnaires were obtained. Informant responses provided a guide for eliminating ambiguities in wording. Overall, respondents easily understood the questionnaire items and questions. Based on the pilot study data, the measurements were refined by checking item-to-total correlations and Cronbach's α (Hair et al., 2006; Nunnally, 1978).

3.2. Measures

Measurements of research constructs were generated in two ways: (1) for variables employed in existing research, measures with acceptable measurement quality were adopted and slightly modified

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