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TITLE

Absorptive Capacity, Dynamic Capabilities and Product Innovation

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ABSTRACT

A firm's ability to exploit external knowledge into product innovation is critical to its business success. Two well-established models, Absorptive Capacity (ACAP) and Dynamic Capabilities (DCAPs), offer insights into this issue. However, the constructs of these two models are confusingly mingled; and their effects are ambiguous. We argue that the ambiguity on effects is associated with the confusion of their underlying characteristics. This paper seeks to better understand the constructs and effects of these two models through a critical literature review and survey research. A 'Best Practice' study further observed what the more successful firms have done differently. We provide a view to untangle the confusion by dividing DCAPs into two dimensions (D1 and D2). Results suggest that it is D2-DCAPs that matters the most for innovation success. Finally, the 'Best Practice' study provides practical advice for firms' sustainable competitiveness and business success.

KEYWORDS

Absorptive Capacity, Dynamic Capabilities, Product Innovation, Best practice

Absorptive Capacity, Dynamic Capabilities and Product Innovation

(A Developmental Paper)

There is clear evidence of considerable variance in the time firms take to convert innovation excellence into market success (Little, 2010). It is also clear that there is considerable variance in the conversion of new product launch which converts into business success (Barczak et al, 2009). Development of the ability to achieve product innovation success is crucial to a firm's growth and survival. Two well-established models offer insights into this issue: absorptive capacity (hereafter ACAP) that emphasises a firm's ability to value, assimilate and commercially utilise new, external knowledge (Cohen and Levinthal, 1990, p128); and dynamic capabilities (hereafter DCAPs) that emphasises a firm's ability to integrate, build and reconfigure internal and external competences in order to adjust development in a rapidly changing environment (Teece et al., 1997, p.521). Both models carry implications for building a firm's ability to achieve innovation success for its long term competitiveness in an open and dynamic market.

Despite their distinctive research streams, the constructs of these two models are confusingly intermingled in the existing literature (Zahra and George, 2002; Marsh and Stock, 2003). For example, Zahra and George (2002) recognise ACAP as a DCAP that influences the sustainability of a firm's competitive advantage. Marsh and Stock (2003) study DCAPs through the construct of acquisition, distribution, interpretation, retention and application of knowledge, an almost identical construct to ACAP. Furthermore, concluding what impact these two models have on product innovation is also confusing. For example, by investigating R&D intensity, Tsai (2001) found that a firm's ACAP is positively associated with its innovativeness. By focusing on the role of prior knowledge, Marsh and Stock (2003) suggest that effective management of DCAPs increases product innovation success. However, different conclusions are also evident. For example, a study

by Robertson et al. (2012) shows that in managing open innovation, ACAP alone does not provide an adequate foundation for product innovation. Eisenhardt and Martin (2000) have found that in markets with high velocity, firms with more successful new product performance rely less on routinised DCAPs. Zott (2003) has also found that a firm's DCAPs are not directly linked to its business performance. These studies show little consensus about the effects of ACAP and DCAPs on product innovation. We argue that this lack of agreement on the effects of these two models is associated with our imperfect understanding of their underlying characteristics indicating a need to look closely at the fundamental operation of ACAP and DCAPs. Unfortunately, the current literature is ambiguous. This paper seeks first to provide clarity in their fundamental constructs. In so doing, we critically review the literature of ACAP and of DCAPs, from which we propose a conceptual framework. By testing the proposed conceptual framework, we then investigate the impact of these two models on product innovation success.

In the literature, each model came from a mature root with a very large number of studies. To tackle the challenge of the large number and broad range of relevant studies on ACAP and DCAPs, we used the ABI/INFORM GLOBAL (ProQuest) to search the scholarly journal papers that named 'absorptive capacity' or 'dynamic capabilities' in their document title. The publication timeframe was set between January 1990 and June 2013. As a result, we identified 274 papers for 'absorptive capacity' and 326 papers for 'dynamic capability'. We then found 42 ACAP papers and 64 DCAPs papers from thirteen 4* journals (based on 2010 ABS ranking) in the areas of strategy, management and innovation. Table 1 details this result. For a systematic and objective review, we conducted a thematic analysis (Berg, 2006; Boyatzis, 1998) to identify the underlying assumptions of the subjected models. We use the term 'assumptions' to refer to the idiosyncratic nature, properties, characteristics and principles that were assumed and proposed by the authors of the identified papers.

Results from our literature review suggest that the fundamental characteristics of the DCAPs model lie in two unconsolidated dimensions (see Figure 1), which we call Dimension One (D1) DCAPs and Dimension Two (D2) DCAPs. D1-DCAPs highlights that firms' capabilities are developed through a series of historical path-dependent processes (or routines). The properties of the 3Ps framework (Teece et al., 1997), first-order capabilities (Winter, 2003) and the theory of exploitation (March, 1991) contribute to this dimension. D2-DCAPs emphasises that the abilities of a firm are developed by not being trapped by its past to avoid the issue of core rigidity. It shares similar characteristics with context fit (Helfat et al, 2007), exploration (March, 1991) and the 'higher-order' account (Winter, 2003). The literature seems to suggest that ACAP is associated with D1-DCAPs, but is not associated with D2-DCAPs.

In order to build data to test our hypotheses, we employed a research survey. Data were collected from a large-scale survey using a self-administered structured questionnaire. The sample framework used was a combination of reports on innovation and new product development activities published by UK Trade and Investment (UKTI). As a result, 105 usable data sets were collected. Results of our survey research support our hypotheses that ACAP is associated with D1-DCAPs, but not associated with D2-DCAPs. To better understand what the more successful firms have done differently with respect to their use of ACAP and DCAPs for product innovation, we conducted a 'Best Practice' study (Barczak et al., 2009). To do so, we used the Product Development Management Association (PDMA) approach (Barczak et al., 2009; Griffin and Page, 1996) with a total of seven success criteria measuring overall, relative, market and financial success at the firm level. Survey results also suggest that it is D2-DCAPs, and not D1-DCAPs or ACAP that significantly impact on product innovation performance.

This paper is significant in several aspects. First, the study of ACAP and DCAPs continues to stimulate debate (Easterby-Smith et al., 2009), particularly in their definition and effects. Our study

contributes one view to untangling the intermingled constructs between ACAP and DCAPs. From the lens of D1 and D2, this study provides an explanation as to why ACAP can be claimed as a DCAP (Zahra and George, 2002; Lichtenthaler and Lichtenthaler, 2009). Furthermore, the implications of these two models' underlying properties are crucial in developing firms' ability for product innovation success. Results of the survey research suggest that ACAP and D1-DCAPs are important, but may not be sufficient for better product innovation performance. It is D2-DCAPs that matters the most. Finally, our comparison of the practices of 'Best' firms (more successful) and the 'Rest' provides practical advice for managers who are seeking sustainable competitiveness and business success.

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**Table 1: Number of Papers
(with Title of ACAP/DCAPs from 4* Journals⁺)**

Publication Title	Number of Papers on ACAP	Number of Papers on DCAPs
Academy of Management Journal	5	1
Academy of Management Review	3	1
Administration Science Quarterly	1	-
British Journal of Management	2	11
Journal of Business Venturing	2	4
Journal of International Business Studies	2	5
Journal of Management	-	2
Journal of Product Innovation Management	2	4
Management Science	1	1
Organization Science	4	7
Organization Studies	-	6
Research Policy	11	-
Strategic Management Journal	9	22
Total number of papers from 4* journals	42	64
Total Scholarly Journals (1990 - 2013) ⁺⁺	274	326

⁺ ABS ranking 2010.

⁺⁺ Results from the ABI/INFORM GLOBAL by ProQuest for the period: January 1990 - June 2013.

Figure 1: The underlying nature of ACAP and DCAPs

