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Developing supplier integration capabilities for sustainable competitive advantage: A dynamic capabilities approach

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ABSTRACT

Previous research describes supplier integration as a competitive resource that manufacturers use to create economic rents. Considering the mixed results obtained from linking supplier integration with performance outcomes, a 'dynamic' component – or the ability to reconfigure the supply chain to adapt to changing environments – appears critical to creating a sustainable competitive advantage. This study identifies integration sensing, seizing and transforming as sub-capabilities that together form a dynamic capability, referred to herein as supplier integrative capability (SIC). That is, SIC enables buyers to sense changes in the supply environment by sharing information with suppliers, seize opportunities presented by establishing procedures to analyse this information and make long-term changes to existing processes. A global sample from the industrial sector reveals that the three capabilities exhibit complementarity and must exist simultaneously for the capability to be effective, which then enhances both process flexibility and cost efficiency and helps firms avoid the traditional trade-off of cost and flexibility. In addition, market and technological dynamics strengthen the effect of SIC on operational performance; supply base complexity attenuates this link.

1. Introduction

As supply chain managers scrape their cost barrels, looking for costs to eliminate, companies seek more innovative models that can not only reduce costs but also improve services. Such innovative models often are inspired by changes, customer requests and opportunities in the market that require firms to renew themselves by altering their resources and competences over time. Accordingly, supply chain managers must adapt their integration practices to changes in the market by exploiting their 'dynamic' capabilities (Teece, 2007; Teece et al., 1997) to renew their supplier integration practices and change their resources (processes or products) (Danneels, 2011). As indicated by Jarrat (2004), all well-designed relationship practices require continuous adaptations.

In practice, 61% of manufacturing companies worldwide acknowledge that supply chain integration can contribute to their profits by facilitating new waves of transformational processes in the supply chain (Underwood and Agg, 2012). For example, the head of value chain management at Novartis explains that to stay ahead of competition, the vaccine firm must share information with suppliers; set up systems and procedures to create smooth supply flows, which in turn help resolve every day supply problems; and ensure that buyers and suppliers both develop innovative supply chain projects to support long-term, cooperative objectives (Deshais, 2012). Moreover, as stated by the Director of Integrated Logistics at Kuehne and Nagel: 'Businesses cannot simply sit back on their laurels and organizations will need to constantly evaluate and adjust their supply chain operations. The challenge is that it can become a rather perpetual and cyclical process that seems to require constant re-evaluation and change as the ground moves beneath it' (Underwood and Agg, 2012).

But not all firms are equally successful in setting up such capabilities. Whereas Frohlich and Westbrook (2001) argue that higher levels of inter-organizational integration practices lead to better operational and firm performance, other studies suggest negative effects of supplier integration (Anderson and Jap, 2005; Villena et al., 2011). Because some firms fail to benefit from integration practices, while others successfully manage supplier integration to create value (Kale et al., 2002), we seek to determine which factors lead to successful supplier integration and posit that differences in

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performance improvements might depend on the extent to which a buyer can adapt its supply chain to new realities.

In particular, research has shown that using suppliers' expertise and knowledge affects a buyer's ability to learn, adapt and create change (e.g., Clark and Fujimoto, 1991; Jarrat, 2004; Kim et al., 2011; Ragatz et al., 2002). This learning process can be stimulated by creating integrative capabilities, such as processes to (1) exchange information, (2) analyse the information and (3) adapt the supply chain to cope with the new realities. Accordingly, we propose that companies can set up successful supplier integrative capabilities (SIC) that enable them to improve operational and, ultimately, financial performance. Moreover, three reasons might explain why companies fail to develop SIC: (1) buyers and suppliers fail to exchange the necessary information; (2) even if they share this information, they may have difficulties systematically analysing it to understand what is happening in the supply chain and (3) even if they share and analyse the information, they may not possess the capability to exploit the information and reconfigure their supply chain to respond to environmental challenges.

Our research thus contributes to supplier integration literature in four ways. First, we conceptualize and test the notion that supplier integration constitutes a dynamic capability, related to success in buyer–supplier relationships. Second, using survey data from a global sample in the industrial sector, we show that firms with SIC, including all three sub-capabilities of integration sensing, seizing and transforming, can increase their operational and financial performance. Third, we describe how market and technological dynamics, as well as supply chain complexity, moderate the relationship between SIC and performance. Fourth, we apply dynamic capabilities to understand why some firms enjoy greater benefits from supply chain integration and thus build a foundation for interdisciplinary research.

Starting from the resource-based view, we introduce the idea of a dynamic capability and apply it to the notion of supplier integrative capability. Next we formulate our hypotheses and discuss our research model in Section 3, then present the results of the empirical hypotheses tests in Section 4. Finally, we offer discussions of the implications of the results for OM researchers (Section 5) and practitioners (Section 6), as well as some limitations and recommendations for further research (Section 7).

2. Theoretical framework and hypotheses development

2.1. From the RBV to dynamic capabilities

The resource-based view of the firm (RBV) is a theoretical framework that seeks to explicate how firms, as bundles of heterogeneous resources that are valuable, rare, inimitable and non-substitutable, achieve sustainable competitive advantages (Barney, 1991; Penrose, 1959; Peteraf, 1993). The value of the RBV lies in its ability to identify which resources define a firm's success. A capability view complements the RBV by identifying which capabilities help firms apply their resources across multiple environments or situations. According to a Schumpeterian (1950) perspective, it is difficult to maintain sustainable competitive advantages in dynamic environments, so firms constantly must reconfigure their resources to fit changing situations. In turn firms need dynamic capabilities that enable them to create, extend and modify the ways they earn their living (Helfat et al., 2007). Similar to Teece et al. (1997) and Eisenhardt and Martin (2000, p. 1107), we define dynamic capabilities as 'the firm's process to use resources – specifically, to integrate, reconfigure, gain and release resources – to match and even induce market change.' With these organizational and strategic practices, firms achieve new resource configurations as their markets evolve. In turn, dynamic capabilities drive the creation, evolution and recombination of other resources into new sources of competitive advantage. In contrast to operational capabilities, which enable a firm to earn a living in the short term and maintain the status quo (Helfat et al., 2007), dynamic capabilities help it constantly renew operational capabilities (Winter, 2003) and address long-term changes in its environment. Helfat and Winter (2011) also caution that the line between operational and dynamic capabilities is unavoidably blurry, because change is always occurring to some extent. Distinctions such as new versus existing business cannot differentiate between operational and dynamic capabilities, and some capabilities even serve dual purposes (Helfat and Winter, 2011). Even with these overlaps though, operational and dynamic capabilities support distinct purposes, i.e., short-term and long-term performance improvements (Helfat et al., 2007; Winter, 2003).

2.2. Defining SIC as a dynamic capability

Some dynamic capabilities enable firms to enter new business or create new products or processes (Helfat et al., 2007). Across these types of dynamic capabilities, information processing capabilities consistently serve to help the firm identify the nature of the changing environment and thus sense opportunities (Helfat et al., 2007; Pierce et al., 2002). We focus on supplier integrative capabilities (Helfat et al., 2007) as essential routes to learning from suppliers and adapting the supply chain to changes in supply.

Integration refers to 'the unified control of a number of successive or similar economic or especially industrial processes formerly carried out independently' (Webster, 1966, p. 1175). In a buyer–supplier context, supplier integration is the degree to which a manufacturer partners with its suppliers to structure inter-organizational strategies, practices and processes into collaborative, synchronized processes (Droge et al., 2012; Flynn et al., 2010; Katunzi, 2011). Swink et al. (2007) defines operational integration as the coordination of daily flows, such as transactions, material movements and ordering processes, to achieve effective movements of products, services, information, money and decisions, which in turn provides maximum value to the customer at low cost and high speed (Flynn et al., 2010; Frohlich and Westbrook, 2001).

Starting from these definitions, we define supplier integrative capability as a dynamic capability that contains processes to achieve effective and efficient product and information flows between buyers and suppliers (Carr and Pearson, 1999; Swink et al., 2007), as well as the ability to adapt these processes to environmental change. Then, in line with previous research, we argue that SIC serves dual purposes: It enables communication and coordination across organizational units and firms (Fortune and Mitchell, 2012), such that it can facilitate smooth operations and delivery processes, and it supports dynamic purposes, such as introducing a new distribution channel or sourcing from different regions to mitigate supply risks. Thus SIC might be dynamic and operational, depending on its nature and intended use (Helfat and Winter, 2011). Most extant literature addresses operational goals (e.g., Frohlich and Westbrook, 2001; Vereecke and Muylle, 2006); we seek to add a dynamic view.

2.3. Processes underlying SIC

Teece (2007) identifies three core processes of a dynamic capability: (1) sensing, (2) seizing and (3) transforming. These sub-capabilities are complementary, such that only when they are combined and aligned can they produce a dynamic capability. Transforming, which is responsible for modifying integrative processes, particularly ensures the dynamic nature of the capability, in that it is the ability to adapt processes to changing