

Knowledge as a strategic resource in supply chains

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Abstract

Despite the importance of supply chains to firms, we know little about the intangible aspects of why some supply chains excel while others struggle. Building on the resource-based view, strategic choice theory, and configurational research, we suggest that the relative fit among strategy and eight knowledge elements is a key to achieving superior supply chain performance. Using data from 913 entities in supply chains, we conducted a profile deviation analysis by using ideal “knowledge profiles” for five strategy types as the benchmarks. Separate analyses were conducted based on the ideal profiles derived from *qualitative*, *quantitative*, and *theoretical* inputs. Overall, the results indicate that the strategy-knowledge fit is associated with chain performance. Our findings lend support to the notion that capitalizing on knowledge can create superior performance in supply chains, but only if the relative emphasis on various knowledge elements matches strategy.

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1. Introduction

Why some firms outperform others has long been a central question within the organizational literature (e.g., Hitt et al., 2004; Vorhies and Morgan, 2005). Substantial inquiry has focused on knowledge (i.e., credible information and/or experience—Grant, 1996) as a means to achieve superior performance. Knowledge has been investigated under several monikers, including organizational learning, market orientation, and the knowledge creating company. Regardless of the terms used, the themes across this work are that knowledge can serve as

an intangible strategic resource and, as such, is crucial to efforts to create value in a unique, inimitable, and non-transferable way (Wernerfelt, 1984, 2005).

Although much attention has focused on understanding performance differences between firms, little is known about the intangibles associated with why some supply chains outperform others. A supply chain is a “network of facilities and activities that performs the functions of product development, procurement of material from suppliers, the movement of materials between facilities, the manufacturing of products, the distribution of finished goods to customers, and after-market support for sustainment” (Mabert and Venkataraman, 1998, p. 538). The lack of attention to the link between knowledge (as an intangible resource) and supply chain outcomes is unfortunate because firm and chain outcomes are increasingly intertwined. Today, competition pits supply chains against each other in the competitive arena (Ketchen and Guinipero, 2004).

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Firms such as Wal-Mart, Toyota, and Dell have exploited supply chain management skills into dramatic competitive advantages and excellent performance. This highlights the value of ‘strategic supply chain management’—viewing supply chains not just as production and distribution mechanisms, but also as important competitive weapons (Hult et al., 2004). These firms’ success also suggests that increased scholarly attention to supply chain outcomes is needed.

Building on extant theory and research, we focus on how supply chains’ efforts to build and deploy knowledge influence important outcomes. We examine knowledge within two critical operations management functions within supply chains: logistics (the distribution of finished goods to customers) and supply management (procurement of material from suppliers) (cf. Mabert and Venkataraman, 1998). Our investigation builds on three important theoretical traditions. The resource-based view (e.g., Barney, 1991; Wernerfelt, 1984) is the basis for isolating knowledge elements that may operate as value creating mechanisms for supply chains. Strategic choice theory draws our attention to how these knowledge elements may be differentially emphasized across five supply-chain strategies: prospectors, analyzers, low-cost defenders, differentiated defenders, and reactors (e.g., Miles and Snow, 1978). Configurational inquiry suggests that a profile deviation approach be used to examine how different types of supply chains leverage knowledge into superior performance (e.g., Doty et al., 1993).

Our research question is: how does the confluence of knowledge elements and strategy type relate to supply chain performance? In addressing this question, our study’s overall theoretical contribution is developing an amalgam of the three perspectives (the resource-based view of the firm, strategic choice theory, and configurational theory) to explain the interdependencies among critical knowledge elements that result in superior supply chain performance within different strategy types. Empirically, we fill a gap in the operations management literature by providing quantitative support for theorized relations among knowledge elements, supply chain strategy, and performance. In doing this, we develop ideal knowledge profiles for the viable strategy types via qualitative, quantitative, and theoretical means. The next section addresses the theoretical background and hypotheses, followed by the method, analysis, results, and discussion.

2. Theoretical background and hypotheses

The common approach to examining how constructs, such as knowledge, strategy, and performance, are

intertwined is to test hypothesized linear relationships that are expected to reflect each member of a sample. However, a significant drawback to this methodology is that critical relationships may be overlooked empirically (Miller, 1987). For example, if stressing organizational memory helps outcomes for some supply chains while decreasing the same outcomes among other chains, these effects, in essence, “wash out” in an analysis that spans the entire sample. As such, this aggregate analysis is problematic when examining the true effects of how strategic “knowledge” elements are organized as a collection to reap advantages in chains. Instead, a more appropriate analysis of knowledge within supply chains is via a focus on configurations—the simultaneous consideration of multiple interwoven factors (Miller, 1997). As applied in our study, a configuration refers to the constellation of knowledge elements and strategy (e.g., Meyer et al., 1993). Using configurational research as the foundation, the closer a supply chain matches an ideal constellation, the better its performance (cf. Vorhies and Morgan, 2003, 2005). Equally important, our focus on configurations avoids the aggregation problem described above (e.g., Miller, 1987).

Venkataraman (1990) suggests that our approach to fits (i.e., where fit among several knowledge elements and different strategy types is examined concurrently and linked to performance) requires configuration to be assessed using profile deviation analysis. Such an analysis portrays fit as the extent to which the knowledge elements of a supply chain vary from those of an “ideal” profile for its strategic type (Zajac et al., 2000). Next, we detail the theoretical basis for the elements of the profiles (knowledge elements and strategy) and the outcomes examined in this study. We then develop hypotheses relating the profiles and the outcomes.

2.1. Knowledge elements

We relied on the resource-based view (RBV), with complementary underpinnings in the knowledge-based view (e.g., Grant, 1996), as the foundation for isolating knowledge elements that are critical in the creation of strategic resources. The RBV asserts that a firm’s resources shape important outcomes (e.g., Wernerfelt, 1984). Resources consist of physical and intangible assets as well as organizational capabilities (e.g., Wernerfelt, 1984, 2005). Drawing on the RBV, we suggest that in addition to its role in firms, knowledge can contribute substantially to an intangible “strategic resource” in supply chains as well (cf. Grant, 1996;

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