


KNOWLEDGE IN GLOBAL SUPPLY CHAINS

By Tomas Hult

Executive Briefing: Despite the importance of supply chains to firms, we know little about the intangible aspects of why some global supply chains excel while others struggle. The fit among strategy and knowledge elements is a key determinant of global supply chain performance. But, which knowledge elements should be stressed by which firms?

 Why some firms outperform others has long been a central question in business. Substantial corporate resources and research inquiry have focused on knowledge (i.e., credible information and/or experience) as a means to achieve superior performance. For clarification purposes, taking advantage of knowledge initiatives has been the focus in a variety of ways – including in organizational learning, market orientation, and the knowledge creating company. Regardless of the labeling, the themes center on the fact 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.

Interestingly, little is known about how knowledge helps some firms' supply chains excel whereas others do not. The lack of attention to knowledge in supply chains is unfortunate because firm and supply chain outcomes are increasingly intertwined. Indeed, an evolving feature of modern competition is that rivalry is becoming less "firm vs. firm" and more "supply chain vs. supply chain." Firms such as Wal-Mart, Toyota, and Dell have leveraged their supply chains into significant competitive advantages and strong performance, illustrating the importance of chain vs. chain competition. This begs the question: How are knowledge elements and strategies related to performance in global supply chains?

Knowledge Constructs

- Organizational memory is the achieved level of knowledge, experience, and familiarity with global supply chain operations.
- Knowledge tacitness is the degree of codifiability and teachability of the wisdom existing in the global supply chain.
- Knowledge accessibility is the degree to which wisdom is easily available in the global supply chain.
- Knowledge quality is the relevance, accuracy, reliability, and timeliness of global supply chain wisdom.
- Knowledge use is the application of global supply chain wisdom to solve a particular problem or a make a particular decision.
- Knowledge intensity is the extent to which a global supply chain depends on the wisdom innate in its culture as a source of a competitive edge.
- Responsiveness refers to the action taken as a function of knowledge that has been built in the global supply chain.
- Learning capacity is the extent to which a global supply chain continually increases its usable knowledge to develop a foundation for its competitive edge.

Research Study

Data on 913 firms over a three-year time-period (2001-2003) were used to examine the effects of various knowledge initiatives on global supply chain performance. The sample consisted of supply chain managers drawn from the membership directories of the Council of Supply Chain Management Professionals and the Institute of Supply Management.

Global supply chain performance was measured via the four competitive priorities that are well-established outcomes in supply chain research: speed, quality, cost, and flexibility. Measures for each dimension was used to develop an overall performance index consisting of equally weighted (.25) scores for the four dimensions.

The testing consisted of confirmatory factor analysis for the measures and hierarchical multiple regression involving the use of profile deviation analysis to examine the effect of knowledge on performance. Three forms of tests were conducted using qualitatively derived ideal knowledge profiles (using expert raters), quantitatively derived profiles (using the top performers in the dataset), and theoretically derived profiles (whereas maximum scores on each knowledge element is preferred).

What Kind of Knowledge Is Needed?

The Table summarizes the key knowledge elements that are important for each strategy type (i.e., the imperatives that seem to drive each configuration of knowledge and strategy).

High performing prospectors managed responsiveness, quality of knowledge, accessibility of knowledge, knowledge intensity, and learning capacity. One interpretation of these results is that prospector supply chains have to adopt a problem solving orientation while also drawing extensively on knowledge embedded in the chain.

Successful analyzers were those that mastered learning capacity, responsiveness, knowledge intensity, quality of knowledge, memory, and accessibility of knowledge. Managers of these supply chains must master more than twice as many knowledge elements as their counterparts in charge of differentiated defenders (and reactors), as well as more than low cost defenders and prospectors.

Successful low cost defenders relied on memory, knowledge intensity, knowledge use, and accessibility of knowledge. Taken together, the four knowledge elements needed by low cost defenders are consistent with the emphasis on "efficiency." When facing strategic as well as operational issues, low-cost-defender supply chains must strive to find knowledge efficiently. Tapping existing knowledge (memory) that is relatively easy to access (accessibility) is often the most efficient use of resources.

Differentiated defenders that prospered relied heavily on accessibility of knowledge, quality of knowledge, and memory – which also represent three of the six knowledge elements that analyzers preferred in their quest to achieve superior performance. Differentiated defenders walk a metaphorical tightrope in that they try to protect a niche through boldness and (often great) specialization that lead to (very) customized products or services rather than the more traditional cost containment exemplified by many supply chains.

Strategy Types

- Prospectors take on an aggressive new product-market position within defined markets and tend to be industry pioneers in the development of new technologies.
- Analyzers represent an intermediate form of strategy; they maintain a secure market position within a core market but also seek new market positions
- Low-cost defenders are seldom at the head of chain development practices; their focus is instead on finding ways to lower costs of existing (niche) chain practices to maintain a stable market domain.
- Differentiated defenders are rarely at the forefront of supply chain development; they focus on exploiting elements that they do particularly well.
- Reactors act in response to competitive or other chain pressures in the short-term.

Contrary to vast research, the reactor type may in fact be a viable strategy at least to achieve short-term performance in supply chains. They are likely to stress learning capacity, memory, and quality of knowledge in their quest to be successful (at least in the short term).

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Key Knowledge Elements for Types of Global Supply Chains

	Prospectors	Analyzers	Low Cost Defenders	Differentiated Defenders	Reactors
Organizational Memory		√	√	√	√
Tacitness of Knowledge					
Accessibility of Knowledge	√	√	√	√	
Quality of Knowledge	√	√		√	√
Knowledge Use			√		
Knowledge Intensity	√	√	√		
Responsiveness	√	√			
Learning Capacity	√	√			√