

# Knowledge Management in Supply Chain Networks

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## INTRODUCTION

This article reviews current research and practice of knowledge management (KM) and inter-organizational learning in supply chain networks. Knowledge management is the organizational process for acquiring, organizing, and communicating the knowledge of individual employees so that the work of the organization becomes more effective (Alavi & Leidner, 1999). Knowledge management is an increasingly important process in business organizations because “managing human intellect—and converting it into useful products and services—is fast becoming the critical executive skill of the age” (Quinn, Anderson & Finkelstein, 1998). Grover and Davenport (2001) state that KM becomes “an integral business function” when organizations “realize that competitiveness hinges on effective management of intellectual resources.” Grover and Davenport also argue that knowledge management works best when it is carried out by all the employees of the organization and not just KM specialists.

Business organizations frequently partner with other firms to complement their core competencies. To collaborate effectively, partner firms have to communicate with each other information about business processes as well as share ideas of how to design or improve business processes. This phenomenon of knowledge sharing across organizational boundaries is called inter-organizational learning (Argote, 1999). Knowledge management, we posit, is necessary to facilitate inter-organizational learning and direct it in a way that supports the organization’s overall objectives.

Supply chain systems are an example of business networks. Supply chains involve not only multiple corporate entities but also organizational units within

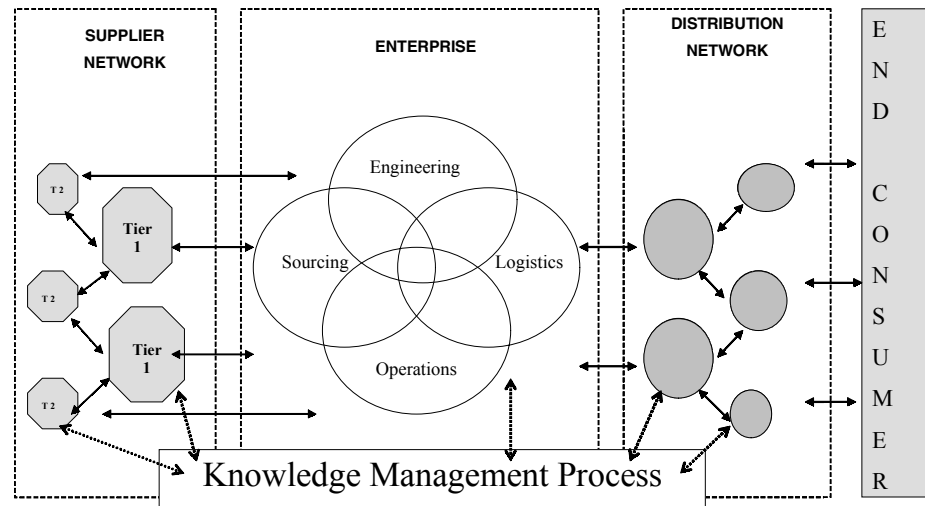
a single organization. We present practices used in business organizations and networks of businesses to manage the information and knowledge sharing processes using the context of supply chain systems.

## BACKGROUND

A supply chain consists of all parties involved, directly or indirectly, in fulfilling the end consumer’s request. Its primary purpose is to satisfy customer needs while maximizing the overall profitability of the chain. A typical supply chain involves a variety of stages that may include customers; a distribution network of retailers, wholesalers, and distributors; manufacturing enterprises; and tiers of suppliers (Figure 1). Information, knowledge, funds, products, and services flow along both directions of the chain, where more than one player is often involved at each stage. The structure of supply chain systems can be described as a business network where inter-organizational learning and information sharing are critical factors in determining the chain’s competitiveness.

The performance of a supply chain depends upon how well its processes are managed for the type of product that is associated with the chain. Fisher (1997) classifies products on the basis of their demand patterns, claiming that a product falls into one of two categories, either primarily functional or primarily innovative. Functional products satisfy basic needs and include the staples that people buy in a wide range of retail outlets such as grocery stores and gas stations. These products have stable, predictable demand, and long life cycles. Due to well-developed competition, low profit margins occur, requiring the chain to focus almost exclusively on

Figure 1. The integrated supply chain



minimizing physical costs. Companies need to coordinate the ordering, production, and delivery of supplies in order to minimize inventory and maximize production efficiency in order to meet predictable demand at the lowest cost.

Innovative products, such as fashion apparel and technology products including plasma TVs, cellphones, and iPods, are differentiated from competition by their designer options and new features and capabilities. The novelty of these products allow higher profit margins, but also result in more demand uncertainty as it is difficult to predict how the market will respond to the newest design features and options. The life cycle for innovative products is short as ensuing competition forces companies to introduce newer innovations in order to maintain the higher profit margins. The short life cycles and the great variety typical of these products further increase demand unpredictability. The demand uncertainty from the market environment increases the risk and costs of shortages and excess supplies throughout the chain. To mitigate this risk, it is crucial that information flows not only within the chain but also from the marketplace to the chain. Fisher (1997) describes managers' primary focus in supply chains for innovative products as market mediation, the need to read early sales numbers or other market signals and have the chain respond quickly. The critical decisions to be made are not about minimizing costs but about where in the chain

to position inventory and available production capacity in order to hedge against the uncertain demand and be responsive. Supply chain systems reduce the external environmental uncertainty by introducing formal information and knowledge transfer mechanisms between supply chain partners. In supply chains with innovative products, suppliers are evaluated based on their reliability, speed, flexibility, and product development skills as well as for their cost.

Due to the emphasis on market mediation, supply chains for innovative products require more collaboration about product design and improvement of business processes than supply chains for functional products. While information sharing can improve the performance of functional product supply chains, inter-organizational learning is essential to support the overall objectives of the innovative product supply chain.

## KNOWLEDGE MANAGEMENT IN SUPPLY CHAINS

As the goal for functional products is to minimize the physical costs associated with the production and delivery of the product, many supply chains have improved their coordination efforts by sharing information. Efficient Consumer Response (ECR) and Quick Response (QR) initiatives are efforts that certain industries have implemented to reengineer

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