# AN IMPLEMENTATION APPROACH OF KNOWLEDGE SHARING AND INTEGRATION IN SUPPLY CHAINS

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Abstract. *Effective supply chain management requires successful knowledge sharing among multiple participating stakeholders, which is particularly important when each entity holds heterogeneous knowledge sources. However, very little research has been conducted to investigate knowledge sharing in supply chain management, especially inter-organizational knowledge integration from the technological or system perspectives. In the current study, we fill the gap in the literature by analyzing the characteristics and requirements of knowledge sharing in supply chains and proposing new knowledge sharing methods based on semantic web technology. We extend RDF/OWL for representing knowledge and design a query language based on this representing method. We also provide automatic combinatorial query and results integration functions to search the relevant knowledge distributed in supply chain and integrate heterogeneous knowledge from multiple entities based on semantic reasoning and transformation.*
**Keywords:** Knowledge sharing, Knowledge integration, Supply chain management, Semantic web, Ontology

1. **Introduction.** Supply chain management (SCM) is defined as a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses and stores, so merchandise is produced and distributed in the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs, while satisfying service level requirements [1]. A key enabler in SCM is collaboration. Supply chain collaborations are those activities among and between supply chain partners concerned with the cost effective, timely and reliable creation and movement of materials to meet customers' needs [2]. Due to a more competitive global market, shorter product life cycles, richer product categories and higher customer expectations, business enterprises today are required to develop and tighten their partner networks across their entire supply chain and shift their business focus from mass production to consumer-focused mass customization. Efficient knowledge sharing is more important than ever for coordinating with business partners and preventing bullwhip effects [3-7]. Among others, knowledge sharing has been recognized as a potential means for achieving sustainable competitive advantage in SCM [6]. Indeed, previous research has demonstrated the value of information sharing [8,9] and knowledge sharing [4,6] in a supply chain. However, current technologies, such as the electronic data interchange (EDI), RosettaNet and the Internet, are more useful for sharing data and information, rather than knowledge [9]. Traditional knowledge representation methods are designed to store or to reason knowledge in a single enterprise, but knowledge sharing among business partners that have heterogeneous knowledge is much more complex than within one enterprise.