Information Technology and Supply Chain Management Coordination: The Role of Third Party Logistics Providers

Pier Paolo Carrus, University of Cagliari, Italy
Roberta Pinna, University of Cagliari, Italy

ABSTRACT

Logistics Service Providers (3PL) have become important players in supply chain management. In a highly competitive context characterized by “time compression”, a successful strategy depends increasingly on the performance of Logistics Service Providers as they play a key integrative role linking different supply chain elements more effectively. However, the role of the information technology capability of these 3PL has not drawn much attention. The research question is: can IT be viewed as a fundamental supply chain management coordination mechanism? If so, does IT capability of third party logistics providers to improve performance in the supply chain and become a bigger factor in a strategic buyer-3PL relationship? By drawing on earlier research on the supply chain management coordination mechanism, the IT capability of third party logistics providers, a case study is conducted.

Keywords: Business Management, Coordination, E-Services, Information Systems, Supply Chain Management, Third Party Logistics Providers

INTRODUCTION

In this paper we defined supply chain as a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and information from a source to a customer (cf. Mentzer et al., 2001). In other words, the philosophy of supply chain management extends the concept of partnerships into a multifirm effort to manage the total flow of goods from the supplier to the ultimate customer to achieve greater benefits. A supply chain management involves three distinct interrelated flows: product/service, information and financial flow. Successful supply chain management requires planning, managing and controlling these three flows through the integration of key processes, from original suppliers through manufacturers, retailers to the end-users, which produce values to the ultimate consumers (Lambert et al., 1998; Bowersox et al., 1996).

Encompassed within this definition, Mentzer et al. (2001) identifies three degrees of sup-

DOI: 10.4018/jesma.2011100102
Supply chain complexity: a “direct supply chain,” an “extended supply chain,” and an “ultimate supply chain.” A direct supply chain consists of a company, a supplier, and a customer involved in the upstream and/or downstream flows of products, services, finances, and/or information (Figure 1a). An extended supply chain includes suppliers of the immediate supplier and customers of the immediate customer, all involved in the upstream and/or downstream flows of products, services, finances, and/or information (Figure 1b). An ultimate supply chain includes all the organizations involved in all the upstream and downstream flows of products, services, finances, and information from the ultimate supplier to the ultimate customer (Figure 1c). Figure 1 illustrates the complexity that ultimate supply chains can reach. In this example, a third party logistics (3PL) provider may be defined as an external supplier that performs all or part of a company’s logistics function. With the increasing globalization of markets, companies began to view logistics as more than simply a source of cost savings and recognize it as a source of enhancing product or service offerings as part of the broader supply chain process to create competitive advantage (Novack, Langley, & Rinehart 1995; McDuffie, West, Welsh, & Baker 2001). However, because logistics users often lack the competence to operate logistics activities internally, they tend to outsource to third-party logistics (3PL). In this way, firms can better focus on their core competencies, such as manufacturing and retailing, while allowing third-party specialists to take care of functions such as transportation, distribution, and warehousing to satisfy the ultimate needs of their customers. The outsourcing of logistics activities requires creating synergistic relationship between the partners with the objective of maximizing customer value and providing a profit to each supply chain member.

All the companies involved in the network are important in establishing a desired level of customer service in the supply chain and satisfying their customers’ requirements. These companies are interdependent in such a way that an individual company’s performance affects the performance of other members of the supply chain. If there is a problem in one company, the problem consequently causes other problems in other areas and weakens the effectiveness of the whole supply chain. Forrester’s (1958) seminal study of industrial dynamics in a four channel supply chain illustrates how rational decision-makers acting independently can cause customer demand information to distort and amplify while moving upstream in the supply chain, resulting in inaccurate forecasts, inefficient asset utilization and poor customer service. In the 1990s, this phenomenon was re-introduced by Lee, Padmanabhan, and Whang (1997), when they coined the term “bullwhip effect” in supply chains to refer to the sub-optimization phenomenon. It is so-called because small order variability at the customer level amplifies the orders for upstream players, such as wholesalers and manufacturers, as the order moves up along a supply chain.

Coordination within a supply chain is a strategic response to the challenges that arise from these dependencies. Benefits from coordination of supply chain activities are well-documented in the literature. There is a growing body of academic research, in a variety of disciplines, on coordination in supply chains, particularly addressing the potential coordination mechanisms available to eliminate sub-optimization within supply chains. Similarly, there is a growing interest in industry to better understand supply chain coordination and the coordination mechanisms that are available to assist the supply chain manager.

Sahin and Robinson (2002) surveyed the literature on supply chain integration and proposed information sharing and coordination among supply chain members as the primary drivers of supply chain performance. The evolution of technologies used by logistics service providers is essentially driven by the development of warehouse management systems, product follow-up techniques and automatic identification. IT allows supply chain partners to communicate directly over data-rich, easy to use information channels, which reduces coordina-
Hydrological Drought Forecasting Using Modified Surface Water Supply Index (SWSI) and Streamflow Drought Index (SDI) in Conjunction with Artificial Neural Networks (ANNs)

Architectural Strategies for Green Cloud Computing: Environments, Infrastructure and Resources
www.igi-global.com/article/architectural-strategies-green-cloud-computing/60405?camid=4v1a