Chapter 5

The Role of Information Technology in Supporting Supply Chain Coordination of Logistics Services Providers

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ABSTRACT

For companies competing in highly dynamic markets, coordination is considered a fundamental component for achieving a higher level of supply chain efficiency. Information and communication technology (ICT) is essential enabler of supply chain coordination and synchronization. The focus of this chapter is on the analysis of ICT adoption in small third-party logistics service providers (3PLs) as prerequisite for improving supply chain coordination. On the basis of evidences emerging from a questionnaire survey carried out on the Italian logistics service market, the chapter analyses ICT usage and the factors inhibiting and facilitating the adoption of technology for supply chain coordination and integration of small 3PLs. A number of implications are derived from the research and managerial perspectives.

INTRODUCTION

Coordination is considered a fundamental element to achieve a better supply chain efficiency and effectiveness in today turbulent business environment. Supply chain coordination requires that all stages to take actions to maximise the global supply chain profit. Coordination is then an integral part of the Supply Chain Management (SCM) approach. The SCM approach is the systemic strategic coordination of business functions among the members of the supply chain. It involves process coordination and integration of suppliers, customers and other supply chain partners. The benefits associated to supply chain coordination relate to costs reduction, better customer service, increased returned on asset and higher reliability and responsiveness to market needs. The achievement of a satisfactory level of coordination is often constrained by management's willingness and capabilities to integrate business activities with

key supply chain members. The lack of coordination and synchronization across different members of a supply chain may result in poor performance. One of the main sources of inefficiencies generated by inadequate supply chain coordination relates to the lack of information processing and sharing. To reduce such inefficiencies businesses have adopted information and communication technology (ICT) to improve processes integration across supply chain. Information technologies and applications have a great potential to overcome the numerous problems associated to the lack of coordination such as the well known "bullwhip effect". Nevertheless, the achievement of an effective integrated supply chain management system in practice is not easy considering the trend toward the outsourcing of an increasing number of supply chain activities. In the case of transportation and logistics activities this has resulted in a substantial expansion of the supply chain role of third party logistics service providers (3PLs). Logistics service companies are pressured by ever-increasing customer demands for higher service level at lower costs. As result, 3PLs are required to move from a pure operational role (e.g. transport and warehousing service providers) to a more strategic function where they may play a more important role in coordinating and accelerating physical and information flows across the supply chain. In this evolving process from an asset based approach toward an increasing process and knowledge based approach ICT is becoming an extremely important element in the management of 3PLs businesses. Logistics service companies are increasingly asked for information services such as real-time tracking and tracing of shipments in addition to basic services such as transportation and warehousing. Information technology capabilities are both a critical variable for logistics service differentiation and a significant tool to cut costs and effectively serve clients through better customisation of services provided.

The supply of information-based services is a great challenge for 3PLs, particularly for small and medium-sized logistics service providers as these companies have more difficulties in adopting ICT systems and applications due to the lack of human and financial resources. The result is that while large 3PLs are gaining substantial benefits from technology usage and implementation, the impact of ICT usage on small logistics service providers remains unclear. Considering the increasing important role played by small 3PLs in the modern logistics service industry, it is important to deep the knowledge about existing level of technology capability and the main drivers and enablers of ICT adoption in small 3PLs. From the research standpoint there is a shortage of research in this field with little empirical investigation analysing the adoption of ICT by these companies. The existing studies have seldom focused on small logistics service providers in general and on the ICT usage in particular.

The main aim of this chapter is to shed light on ICT adoption in small logistics providers as critical prerequisite for improving supply chain coordination. In particular, the research work has investigated currently practices in ICT usage and the major technological enablers and inhibitors affecting the coordination and integration capability of small 3PLs. To achieve these objectives a questionnaire survey has been conducted on sample of small Italian logistics companies. The chapter has been organized into five sections. Following this introduction, the second section reviews the literature on coordination in the context of supply chain management and the associated role of ICT. The third describes the methodological approach used including the hypothesis development process and the contingency model used to test hypothesis. The main survey findings are presented in the fourth section. A detailed discussion of results and possible implications based on them is given in the fifth section. The final section outlines future research directions.

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