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Inter-organizational information sharing: The role of supply network configuration and partner goal congruence

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Abstract

This paper presents a theoretical framework to investigate the relationships between the design of a supply network (SN) and inter-organizational information sharing (IIS). We distinguish between four different types of inter-organizational information sharing. These concepts are developed using a two-dimensional classification scheme consisting of varying levels of the volume of information shared and the strategic importance of this information in an organizational context. Theoretical arguments and analysis of secondary data are used to develop propositions regarding the association between SN configurations and IIS types, and the role of coordination structure in such associations.

Keywords: Supply chain management; Supply network; Coordination structure; Information sharing; Knowledge flow

1. Introduction

Supply chains are now more aptly described as 'supply networks' and can involve extremely complex configurations. Supply networks offer opportunities to gain improved performance and to mitigate inefficiencies (Corbett et al., 1999; Corbett, 2001; Dyer and Nobeoka, 2000; Kotabe et al., 2002; Zhao et al., 2002). However, these benefits cannot materialize unless managers are able to understand the causes of these competitive pressures and are willing to implement innovative strategies to correct them (Lee et al., 1997a,b). Thus, it is critical for managers to realize that:

"*Top-performing companies distinguish themselves from the ordinary by their ability to anticipate where in the chain lucrative opportunities are likely to arise*

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and to invest in the capabilities and relationships to exploit them ... superior market and technological forecasting ability and superior competency portfolio management (*that is*, *supply chain design*) *are critical functions for the organization*" (Fine, 1998: 76).

One source of this ability to anticipate opportunities is inter-organizational information sharing (IIS). Inter-organizational information sharing (IIS) involves sharing across firm boundaries, and is needed since organizations are unable to generate all of their required resources internally. Firms must therefore interact with other organizations that control these critical resources so that they can compete effectively in their environment (Yuchtman and Seashore, 1967). When information is shared in inter-organizational networks, it can result in a more efficient flow of goods and services (Anand and Mendelson, 1997; Dyer and Nobeoka, 2000; Lee et al., 1997a), reduced inventory level, and lower costs (Yu et al., 2001), which benefits the overall network. For example, Wal-Mart shares point-of-sale information with their suppliers and transmits orders electronically to the relevant supplier when inventory for an item falls to a predetermined minimum level of stock (Lancioni et al., 2000). This IIS reduces carrying costs of inventory, facilitates quick response for inventory replenishment and allows suppliers to better plan their production schedules, and reduces lead times (Stevenson, 1994).

Several researchers have discussed the idea that IIS leads to improved performance of the supply network (Cachon and Fisher, 2000; Chen, 1998; Gavirneni et al., 1999; Lee et al., 2000). However, it is difficult for firms to reap these benefits unless they have a better grasp of the antecedents of IIS that influence its effectiveness. This is an area in which firms need guidance so that they can effectively channel resources to their knowledge and information sharing activities. The ability of managers to coordinate the complex network of business relationships that exist between parties involved in the supply network is critical to the success of a firm (Drucker, 1998; Lambert and Cooper, 2000).

Economics of organizational design suggests that organizational structure, and by extension, the configuration of a SN is an important factor in influencing the nature of IIS. The organizational behavior perspective suggests that partner characteristics would play a key role also. The relationship between intra-organizational structure and information sharing has been discussed by Anand and Mendelson (1997). In this paper, we focus on the relationship between IIS and the configuration of the supply network and partner characteristics.

Supply network configuration includes various network patterns (like dyadic, multi-channel, and multi-stage), the location of the firm(s) in question within the network, and the coordination structure in place to manage the relationships between the firms, while partner characteristics involve the issue of goal congruence between the firms in a network. The network patterns, which can have one or more stages, and range from the simple dyadic to the multi-channel network within a single stage, create varying levels of complexity, and hence differing environments for information sharing. Further, location of the firm(s) within a network creates different information needs and different consequences due to the distortion in the flow of information. Managing the flow of information effectively requires close attention to the coordination mechanism established among the member firms in a network. The degree of centralization is likely to affect the nature and amount of information that gets shared across the network. Similarly, the degree to which the partner firms perceive a match in their goals may impact the nature and amount of information they are willing to share with each other.

An understanding of the types of IIS, and knowledge of the relationship between IIS types and SN configuration and partner characteristics is thus vital for effective management of the SN. To help fill this gap in the literature, our paper will focus on the following research question: *How do supply network* (*SN*) *configuration and partner characteristics influence inter-organizational information sharing* (*IIS*)?

The remainder of the paper is organized as follows. In Section 2, we discuss a typology for IIS that was developed based on existing literature. Section 3 covers the methodology used to develop the propositions that are put forth in Sections 4 and 5. In Section 4 we discuss the relationship