

Accessing information sharing and information quality in supply chain management

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Abstract

This paper empirically examines the impact of environmental uncertainty, intra-organizational facilitators, and inter-organizational relationships on information sharing and information quality in supply chain management.

Based on the data collected from 196 organizations, multiple regression analyses are used to test the factor impacting information sharing and information quality respectively. It is found that both information sharing and information quality are influenced positively by trust in supply chain partners and shared vision between supply chain partners, but negatively by supplier uncertainty. Top management has a positive impact on information sharing but has no impact on information quality. The results also show that information sharing and information quality are not impacted by customer uncertainty, technology uncertainty, commitment of supply chain partners, and IT enablers.

Moreover, a discriminant analysis reveals that supplier uncertainty, shared vision between supply chain partners and commitment of supply chain partners are the three most important factors in discriminating between the organizations with high levels of information sharing and information quality and those with low levels of information sharing and information quality.

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1. Introduction

As competition in the 1990s intensified and markets became global, so did the challenges associated with getting a product and service to the right place at the right time at the lowest cost. Organizations began to realize that it is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive. The understanding and practicing of Supply Chain Management (SCM) has become an

essential prerequisite for staying competitive in the global race and for enhancing profitably [12,44,51].

Information sharing is a key ingredient for any SCM system [37]. Many researchers have suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every node within the supply chain [12,54]. By taking the data available and sharing it with other parties within the supply chain, an organization can speed up the information flow in the supply chain, improve the efficiency and effectiveness of the supply chain, and respond to customer changing needs quicker. Therefore, information sharing will bring the organization competitive advantage in the long run.

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The advantage of information sharing in SCM has been intensively discussed [10]. Information sharing improves coordination between supply chain processes to enable the material flow and reduces inventory costs. Information sharing leads to high levels of supply chain integration [24] by enabling organizations to make dependable delivery and introduce products to the market quickly. Quality information sharing contributes positively to customer satisfaction [48] and partnership quality [30]. Information sharing impacts the supply chain performance in terms of both total cost and service level [63]. According to Lin et al. [33], the higher level of information sharing is associated with the lower total cost, the higher order fulfillment rate and the shorter order cycle time.

While information sharing is important, the significance of its impact on the performance of a supply chain depends on what information is shared, when and how it is shared, and with whom [13,22]. Literature is replete with example of the dysfunctional effects of inaccurate/delayed information, as information moves along the supply chain [35]. Divergent interests and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information [17]. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors, but also their own suppliers and customers [35]. It appears that there is a built-in reluctance within organizations to give away more than minimal information [6] since information disclosure is perceived as a loss of power and companies fear that information may leak to potential rivals.

To facilitate quality information sharing across supply chains, an understanding of the factors influencing information sharing is needed so that a strategy may be developed to overcome the barriers preventing information sharing and encourage seamless information flow in supply chains. Previous studies have addressed the importance of certain factors in information sharing and information quality in SCM but few studies have considered simultaneously the impact of environmental factors, intra-organizational factors, and inter-organizational factors on information sharing and information quality in SCM.

To fill this gap, this paper first identifies a set of factors, including environmental uncertainty (customer uncertainty, supplier uncertainty, and technology uncertainty), intra-organizational facilitators (top management support and IT enablers), inter-organizational relationships (trust in supply chain partners, commitment of supply chain partners, and shared vision

between supply chain partners), that may impact information sharing and information quality in SCM. The rationale to select the above factors are illustrated as follows: past researchers consider environmental uncertainty an important driver for information sharing and information quality and organizations will build strategic partnerships with their trading partners to reduce the risk when the environmental uncertainty is high [2,11,28]. Within an organization, on one hand, top management is needed in providing vision, guidance, and support for quality information sharing [30]. On the other hand, the implementation of information technology enables organizations to share information efficiently and securely [32,58]. Moreover, a good inter-organizational relationship based on trust, commitment and shared vision is necessary to encourage information sharing and to overcome the fear of information disclosure and the loss of power over competitor [7,46].

Based on the data collected from 196 organizations of various sizes and industries, multiple regression analyses are used to test the factors impacting information sharing and information quality in SCM, followed by a discriminant analysis testing the relative importance of each of eight factors in discriminating between organizations with high levels of information sharing and information quality and those with low levels of information sharing and information quality. It is found that supplier uncertainty and inter-organizational relationships (trust, commitment and shared vision) are most critical factors in determining the level of information sharing and information quality in SCM and in distinguishing organizations with high levels of information sharing and information quality and those with low levels of information sharing and information quality.

2. Theoretical framework and hypothesis development

Fig. 1 presents a framework displaying the factors impacting information sharing and information quality in SCM and Table 1 summarizes the impact of each factor on information sharing and information quality. It should be pointed out that the antecedents of information sharing and information quality identified in this paper can not be considered complete. Other factors, such as firm size, order size, industry type and supply chain structure may impact information sharing and information quality. Though these factors are of great interest, they are not included due to the length of the survey and the concerns regarding the parsimony of this research.

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