

# Antecedents of Willingness to Share Information in Supply Chain IS

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## Abstract

Information flow between partners enhances supply chain performance and, consequently, is an important point of interest for supply chain IS management. The exchange of information is not only a technical or organizational issue. Indeed, one often presumed, and hence neglected, aspect of the issue is that, in order to actually share information, there needs to be a *Willingness to Share Information*. The question then arises: What are the antecedents of the *Willingness to Share Information* in supply chains? In this exploratory study, we address this question by conducting a semi-structured, guided expert interview with the supply chain manager of an international company. Our study indicates that *Management Support* and employees' *Concern for the Loss of Distribution Liberty* are important antecedents of the *Willingness to Share Information* in supply chains. These findings suggest that all the managers in a company need to be visibly committed to supply chain information sharing and that employees need to be provided with clear information sharing policies that address their potential concerns.

## 1 Introduction

Today, entire corporate structures are being modified to integrate cross-border partnerships and facilities that operate in different locations (e.g., Hahn 2000; Chopra and Meindl 2013). This shift towards global collaborative networks with numerous players and links increases the complexity of the supply chain and, thus, requires a tremendous coordination effort for all parties involved (e.g., Chopra and Meindl 2013). As a result, unambiguous information is essential to creating efficient coordination efforts and to enable cost efficiency, especially in terms of reducing lead time and inventory (e.g., Cachon and Fisher 2000; Tummala et al. 2006). Indeed, successful information flow between the parties involved enhances supply chain performance and, consequently, is an important point of interest when managing supply chains.

In order to ensure information flow, the implementation of advanced IS across all involved parties of a supply chain is common as it provides sophisticated tools for data sharing, gathering, and analyzing (e.g., Li and Lin 2006; Poirier and Bauer 2000; Simchi-Levi et al. 2000). However, the actual exchange of information is not just a technical or organizational issue; it is also a human

issue. One often presumed, and hence neglected, aspect of information flow is that, in order to actually share information through supply chain IS, the involved parties need to have a *Willingness to Share Information*. Indeed, previous research suggests that the unwillingness to share information between supply chain partners may occur more often than a situation of smooth collaboration (Fawcett et al. 2008). If this unwillingness is present, then even though a supply chain might have the technical and organizational capabilities to work efficiently, it can suffer from low-quality information and low efficiency in its information dissemination.

We address this managerial aspect of supply chain IS management and seek to identify the antecedents of *Willingness to Share Information* in supply chains. Our findings, based on an exploratory, semi-structured, guided expert interview with the supply chain manager of an international company, suggest that both *Management Support* and employees' *Concern for the Loss of Distribution Liberty* are important antecedents of *Willingness to Share Information*. These findings suggest that executives need to make sure that all involved managers inside the company are committed to sharing the necessary information to their supply chain partners. In addition, they need to effectively display their *Willingness to Share Information* to people in their spheres of influence, in order to counter employees' potential reluctance to share information. Moreover, our findings suggest that companies should formulate clear information sharing policies with distribution liberty in mind, in order to provide employees with guidance on what should be shared with whom, and to what extent. In doing so, they will mitigate employees' *Concern for the Loss of Distribution Liberty*.

In the next section, we will emphasize the importance of IS for supply chain management, describe the information flow between parties of a supply chain, and introduce *Willingness to Share Information* as an antecedent of successful information flow in supply chains. Following this, we will describe our research methodology. Then, we will reveal and discuss our results before summarizing our findings, presenting their theoretical as well as practical implications, and provide an outlook on further research.

## 2 Theoretical Background

### 2.1 IS in Supply Chain Management

According to Porter's Value Chain Framework (Porter 1985), different functions in an organization are linked so that value can be generated. With regard to Supply Chain Management (SCM), this structure is complex, since the value chains of several firms are linked and merged (Themistocleous et al. 2004; Gunasekaran and Ngai 2004). Generally, a supply chain may be comprised of typical stages such as *supplier, manufacturer, distributor, retailer, and customer* (Simchi-Levi et al. 2000). Nevertheless, the structures of supply chains may vary.

In line with this, in the context of SCM, there are three essential types of IS (cf. Chopra and Meindl 2013): *Supplier Relationship Management (SRM)*, *Internal Supply Chain Management (ISCM)*, and *Customer Relationship Management (CRM)*.

First of all, internal IS ensure smooth operations within functions inside a firm. Hence, the main focus of ISCM systems is to plan activities that will match supply and demand (Chopra and Meindl 2013). Thus, information that is received from CRM and SRM systems is processed into adequate planning systems, which can, for instance, provide support on strategic decisions. One example of

an ISCM system would be an advanced planning system that enables a firm to improve its anticipation of future demand.

Downstream interactions are mainly subject to CRM. Thus, the relevant processes are supported by appropriate IS in order to enable more effective customer service. Customer relations are created and enhanced, while simultaneous responsiveness and adaptability to dynamic customer requirements are ensured (Leußer et al. 2011). Incoming orders or service requests are examples of activities involved in CRM (Chopra and Meindl 2013). Hence, essential information from customers is gathered on this side of the supply chain. Generally, IS have several functions in CRM. On the one hand, they provide major tools for data analysis, so that raw customer data can be transformed into valuable information that holds important implications for demand forecasts, customer service, etc. On the other hand, operative CRM systems create a platform of interaction between customers and the enterprise (Leußer et al. 2011).

Finally, SRM considers upstream processes and interactions with the supplier side. Underlying IS in this field focus on information exchange and collaborative elements that facilitate improved coordination between supply chain partners (Becker et al. 2008; Dong et al. 2009). Electronic data interchange (EDI) systems, which electronically transfer information from one company to another (Seyal et al. 2007), are examples of IS in SRM.

In summary, IS in SCM ensure and manage resource flows. Due to the complexity and often global nature of business activities, coordination of these flows requires cross-organizational proceedings from a collaborative perspective (Themistocleous et al. 2004). Indeed, creating integrated processes, which add value and enable a smooth flow from suppliers to the actual end consumer, becomes an essential part of SCM (Cooper et al. 1997).

## 2.2 Information Flow

Overall, there are three main flows in a supply chain: *material flow*, *financial flow*, and *information flow* (e.g., Hahn 2000; Akkermans et al. 2003):

The transportation of physical products from one stage of the supply chain to another is tracked in the *material flow*. Hence, this flow mainly comprises all activities that follow the production of raw goods, to the point of final delivery to the end customer (Chopra and Meindl 2013). The *financial flow* describes the transaction of financial funds in the supply chains, such as payments for ordered goods or refunds (Mentzer et al. 2001; Akkermans et al. 2003).

Finally, *information flow* can be described as the main tool that enables coordination between supply chain partners, for example in the context of collaborative planning (Fawcett et al. 2007). For instance, if the information flow is efficient, then production schedules and strategies can be aligned, allowing a better forecast of the timeline. In fact, the information flow actually provides major information to the material flow.

Generally, the information flow direction can go upstream and downstream in a supply chain. Information that is passed on downstream to the following stages in a supply chain mainly focuses on events, such as the current production output or expected delivery time of ordered goods. Sharing demand information and changed product requirements with suppliers is an example of an upstream information flow (Zhou and Benton Jr 2007).

The information in the information flow can be transferred through internal and external entities. On the one hand, internal stages or departments depend on coordinative activities between each

other so that value generation within the firm is enabled (Chopra and Meindl 2013). On the other hand, a firm's activities depend also on the preceding and ensuing supply chain partners, which also own a similar value chain structure that needs to be aligned (Lee and Billington 1992). Therefore, both internal and external activities need to be coordinated to achieve an overall smooth information flow. In other words, proper coordination of the information flow needs to ensure that the right information is received at the right time, in the right format, and at all the right places (Cachon and Fisher 2000). As a result, information sharing is generally considered to be a critical success factor for supply chains (Li and Lin 2006; Zhou and Benton Jr 2007).

### 2.3 Willingness to Share Information

The actual exchange of information within supply chains is not only a technical or organizational issue; rather, it is a compound of a variety of aspects. One often presumed, and hence neglected, aspect of the information flow is that, in order to actually share information, there needs to be a *Willingness to Share Information*.

More specifically, most collaborative and interrelated activities in a supply chain depend on information accuracy (Arndt 2006; Zhou and Benton Jr 2007). For example, the demand forecast has implications on all the subsequent stages in the value chain of an organization (Chopra and Meindl 2013). In other words, all partners in a supply chain are strongly dependent on a reliable information flow. In order to establish such a continuous and reliable flow of information, relevant information has to be provided by each member of a supply chain to its partners. As described in the *Theory of Reasoned Action* (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975; Ajzen 1991), *Actual Behavior* is preceded by the *Behavioral Intention* to do so. In our context, *Willingness to Share Information* is a specific aspect of *Behavioral Intention*. Indeed, “[Behavioral] Intentions ... capture the motivational factors that influence a [person's] behavior; they are indications of how hard people are willing ... to perform the behavior” (Ajzen 1991, p. 181). In other words, *Willingness to Share Information* precedes *Actual Sharing Behavior* and, hence, is a central influence factor of the successful information flow in supply chains. Consequently, *Willingness to Share Information* is an important factor for supply chain management to consider. In order to take this factor into account, the following question must be answered: What are the actual antecedents of *Willingness to Share Information*?

## 3 Methodology

In order to address our research question, we chose an exploratory research approach in the form of a semi-structured, guided expert interview (Miles and Huberman 1994). In general, expert interviews are considered to be a cost-efficient approach in the early phases of an explorative research activity (Bogner and Menz 2005). The research method focuses on gathering relevant data by interviewing an expert in the relevant field. Thus, the expertise and function of the respondent are the focus of the conducted interview. Major themes regarding a certain topic may be identified more readily in the context of an interview, and the expertise of the interviewee can be used to enhance the exploration process. In order to gather relevant information, the interview guide is a key element and requires appropriate attention in the preparation phase to highlight the central topics (Mayer 2008). Furthermore, the interviewer can examine relevant issues in greater depth based on the respondent's statements (Mayer 2008).

We used our research question as a starting point (Meuser and Nagel 2009) to develop our semi-structured interview guide, which allowed for a more dynamic and less rigid interview flow. In line with this, our interview questions were designed in an open manner and functioned as orientation during the interview. Before the main interview, we conducted a pretest interview with another professional to fix potential ambiguities and flaws in our questions. In addition to standard parts of an interview such as the introduction of the participants (Helfferich 2005), the final interview guide consisted of the following questions:

- (1) *Please consider the following two statements: Our company shares as much information as possible with its supply chain partners/Our company shares as little information as possible with its supply chain partners. Which of these two statements is appropriate for your company and why?*
- (2) *In your experience, what are the most important factors that drive people's willingness to share information in supply chains?*
- (3) *Are you aware of any factors that hinder people's willingness to share information in supply chains?*

We interviewed a supply chain manager of an international company that develops and manufactures special glass, specialty materials, components and systems. The interview was conducted at one of the company's offices and was conducted in German. With the consent of the interviewee, the interview was recorded and subsequently transcribed. Finally, the transcribed text was analyzed by using the content analyses as described by Mayring (2008) with methods such as deleting identical statements and joining connected arguments.

## 4 Results

Overall, the conducted interview suggests that *Management Support* as well as employees' *Concern for the Loss of Distribution Liberty* are important antecedents of *Willingness to Share Information*.

Since in supply chains there is typically an alignment of numerous internal and external corporate entities with many people involved, our interview partner considered *Management Support* to be crucial for efficient information flow. More specifically, managers' visible commitment to existing supply chain IS as well as their leadership in on-going implementation projects were described as being important for an effective and efficient use of supply chain IS, since it enhances employees' *Willingness to Share Information*. Indeed, our interviewed expert described three specific courses of action: First, managers should visibly show their commitment to information sharing by setting a good example in their own sharing practices. Moreover, *Management Support* in the form of IS training for employees can enhance their ability to use the systems properly, while at the same time lowering their potential fear of becoming obsolete through automation. This ultimately enhances their *Willingness to Share Information* in the supply chain. Finally, the expert emphasized that effective and efficient use of provided IS tools needs to be supervised and controlled continuously in order to ensure the continuous information flow in the long run, requiring the long-term commitment and support by the managers in charge.

Additionally, our interview partner described the potential loss of liberty regarding the distribution of produced goods among customers as a major concern. More specifically, with regards to suppliers, necessary information such as inventory levels is shared by companies without hesitation in order to prevent them from running out of stock, etc. In contrast, a certain degree of reluctance to share information with customers is recognized due to the potential covetousness of multiple

customers for the very same inventory items. Indeed, suppliers regularly have business relationships with multiple customers based on different terms regarding delivery times, etc. As a result, the output allocation among customers is often an individual and strategic decision. Hence, employees might be concerned that if their company's inventory levels, processes, etc. are transparent to all customers, this might weaken their company's position to freely allocate or withhold their output, ultimately limiting the ability to manage differing customer relationships individually. In other words, employees' *Concern for the Loss of Distribution Liberty* can negatively influence their *Willingness to Share Information*.

## 5 Conclusions

In this article, we conducted an exploratory, semi-structured, guided expert interview with the supply chain manager of an international company in order to identify potential antecedents of *Willingness to Share Information* in supply chains. Our findings suggest that *Management Support* as well as employees' *Concern for the Loss of Distribution Liberty* are important antecedents of *Willingness to Share Information*.

These findings hold important practical implications. In order to ensure a successful information flow, our findings suggest that executives need to make sure that all managers in the company are committed to sharing the necessary information to their supply chain partners, and that they effectively display their *Willingness to Share Information* to people in their spheres of influence, in order to counter employees' potential reluctance to share information. Moreover, our findings suggest that companies should formulate clear information sharing policies with distribution liberty in mind, in order to provide employees with guidance on what should be shared with whom and to what extent. In doing so, they will mitigate employees' *Concern for the Loss of Distribution Liberty*.

Our study has some limitations. First, we had the smallest sample size possible, since it consisted of only one conducted interview. As a result, our findings might suffer from the subjective opinion of a single expert from a single company in only one specific industry. In addition, we analyzed the transcript of the interview using content analysis, which is generally considered to be a rather subjective methodology since it is potentially biased by the researchers, their experiences, etc. Nevertheless, since this paper was explorative in nature, it provides a first insight into the potential antecedents of the *Willingness to Share Information* in supply chains and may serve as a starting point for subsequent studies.

We are currently conducting additional interviews with experts from different industries and countries, which we plan to use in the preparation of a later quantitative study. More specifically, we are currently seeking to identify further potential influence factors of *Willingness to Share Information* in supply chain IS so as to quantitatively evaluate them in a subsequent study.

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