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How Supply Chain Governance Influences Information Sharing Behaviors: A Multiple Case Study Approach

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HOW SUPPLY CHAIN GOVERNANCE INFLUENCES INFORMATION SHARING BEHAVIORS: A MULTIPLE CASE STUDY APPROACH

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Abstract

Information sharing within the supply chain is an important factor for effective supply chain management. Having access to the right information allows firms to coordinate activities and collaboratively manage supply chains to realize higher performance. Despite this, there exists significant difference in information sharing behaviors among supply chain members. Using an exploratory case study approach, this research identifies the factors that determine differences in information sharing. Classifying the supply chain governance competencies of supply chain members along three dimensions, technical, advanced technical and relational, we analyze the implications of these three dimensions on the overall information sharing behavior of the firm. Based on an in-depth analysis and comparison of four retail supply chains, we identify different information sharing patterns and the factors contributing to the identified patterns. In particular, it was found that while the technical competency (primarily derived from the use of information technology applications) is necessary, it is not a sufficient condition for collaborative information sharing behavior. Relational competencies play a more important role in facilitating information sharing. Based on the findings from the four cases, we come up with propositions outlining different information sharing patterns in supply chains.

Keywords: Information Sharing, Supply Chain Governance, Incentive Alignment, Case Study.
1 Introduction

Supply chain management initiatives enable firms to improve operational processes such as inventory levels, and achieve higher revenues and better margins (Swink et al., 2010). Inter-organizational information systems are often used to support new supply chain management initiatives, as they can improve inter-firm information sharing. Firms are able to realize cost savings and improve processes through information sharing (Clark and McKenney, 1994, Enslow, 2006). Accordingly, supply chain members have recognized the importance of information sharing as an essential factor influencing supply chain performance (Barrett and Konsynski, 1982, Lee et al., 2000, Rai et al., 2006).

The benefits of information sharing are well recognized (e.g., Klein and Rai, 2009), and various information technology solutions for sharing information and integrating supply chain processes are available; however, firms may still avoid sharing information with their upstream or downstream partners (e.g. Lee et al., 1997, Karen, 2010). Selfish enhancement of their own competencies, increasing bargaining power within a relationship, and the ability to influence terms and conditions in their own favor through control over strategic information are some of the factors that prevent firms from sharing supply chain information (Argyres and Liebeskind, 1999, Nair et al., 2011). As a result, varying forms of information sharing behaviors can be observed within supply chains.

Real life examples also indicate the existence of different information sharing behaviors among supply chain members. For instance, Dell uses its strong bargaining power to integrate upstream supply chain partners into its information flows and material flows, and applies daily information sharing routines to achieve a negative cash-conversion cycle of five days and other process improvements (Magretta, 1998). Toyota and Zara on the other hand achieve a more collaborative and more cost efficient network by setting up routines for knowledge and information sharing (Dyer and Nobeoka, 2000, Ferdows et al., 2004).

Information sharing among supply chain members is complicated by factors such as cultural issues and incentives (Karen, 2010), trust and beliefs (Petersen et al., 2005) and data quality concerns (Forrester, 1961). Previous research and empirical findings in the field of supply chain management and information systems confirm the importance of information management competencies of firms, also referred to as supply chain governance (e.g., Mithas et al., 2011, Rai et al., 2006), and their (socio-) political behavior (Kumar and van Dissel, 1996, Lee et al., 1997) as two major factors influencing information sharing in supply chains. Further, it has been shown that incentive alignment results in higher performance (Agarwal et al., 2010, Straub et al., 2004, Patnayakuni et al., 2006).

However, existing research contributes little towards understanding the various initiatives for successful information sharing among supply chain members (Ketchen and Hult, 2007, Emberson and Storey, 2006). In practice, it is often observed that most firms still tend to share solely transactional information and are not able to accomplish information visibility (e.g., Karen, 2010, Prokesch, 2010). Our research addresses this gap by analyzing differences of information sharing behavior among supply chain members using an exploratory case study approach, and factors that determine information sharing. Based on a classification of different supply chain management competencies, we analyze information sharing in four different retail supply chains. Our analysis provides insights on what the information sharing process looks like, what factors trigger information sharing, and how supply chain governance mechanisms affect information sharing in supply chains.

The rest of the paper is organized as follows. The second section provides the theoretical background of information sharing, incentive alignment and supply chain governance competencies in the field of supply chain management. This is followed by a description of our research methodology. The fourth section presents the results of the case studies, followed by a discussion of the findings from the case studies. We conclude with a discussion of limitations of the current study and implications for future research.
2 Theoretical development

Collaboration among supply chain members positively affects information sharing allowing firms to increase their firm performance (Mithas et al., 2011, Straub et al., 2004). Firms can realize the highest profits through jointly generated exchange relationships (Dyer and Singh, 1998). Nevertheless, firms may have strategic considerations that prevent them from collaborating (Lee et al., 1997). For instance, a specific isolated behavior can often result in a tit-for-tat strategy causing lower rents (Axelrod, 1984). Firms experiencing operational inefficiencies in combination with uncooperative behavior in buyer-supplier relationships often establish several actions to counter such behavior. These actions may include information sharing (Fangruo, 1999), business process reengineering (Disney and Towill, 2003) and contractual safeguards (Mason-Jones and Towill, 1997). Due to the importance of information sharing for supply chain performance, and the strong association between information sharing and incentive alignment, this research explores the relationship between information sharing and incentive alignment, and information sharing behavior from a supply chain governance perspective.

2.1 Information Sharing & Incentive Alignment

In supply chains transactional information sharing is a necessary condition to streamline the exchange of goods, and the sharing of operational information allows firms to establish more efficient supply chain procedures and actions (Seidmann and Sundararajan, 1997). More importantly, sharing of operational and strategic information can generate additional rents and improve supply chain performance (e.g., Lee et al., 2004, Klein and Rai, 2009).

However, organizations may choose not to share information when it is perceived that information asymmetries can be used as a source of competitive advantage and rent generation, especially when relationships are more opportunistic and/or purely transactional (e.g., Nair et al., 2011, Argyres and Liebeskind, 1999). A fair distribution of risks, costs and rewards, and a growing interdependence among individual actors in the supply chain can result in less opportunistic behavior and consequently higher supply chain performance (e.g., Provan, 1993, Granovetter, 1985).

Incentive alignment means that all supply chain members will gain from cooperation through economic value creation (Agarwal et al., 2010). Incentive alignment allows firms to lower risks by fairly distributing rewards, costs and risks among supply chain members (e.g., Narayanan and Raman, 2004, Cachon and Lariviere, 2005). More specifically, incentive alignment encourages information sharing routines and can allow firms to improve supply chain performance. In contrast, an asymmetry of information or knowledge, representing misaligned incentives, results in a lower supply chain performance (Narayanan and Raman, 2004). Previous research has shown that economic incentive alignment is influenced by the level of trust (e.g., Cachon and Lariviere, 2001, Klein and Rai, 2009), cultural aspects (e.g., Dyer and Nobeoka, 2000, Braunscheidel et al., 2010) and supply chain governance capabilities (Godsell et al., 2010, Harland and Knight, 2001). Accordingly, the difficulty in designing an incentive system is high (Tosi et al., 1997).

2.2 Supply chain governance

Supply chain governance is a complex concept that can be determined by different factors. On one hand, the ability to effectively govern the supply chain can be characterized by technical factors such as efficiency of data management. On the other hand, supply chain governance capabilities can also be characterized by relational factors such as trust or bargaining power (e.g., Mithas and Lucas, 2010, Williamson, 1989). Therefore, it is possible to conceptualize supply chain governance as a multi-dimensional competency where each dimension reflects the different perspectives towards managing...
supply chains. In the following paragraphs, we elaborate on the three different dimensions of supply chain governance that we use to analyze our cases.

The technical dimension of supply chain governance analyzes the usage, setup and efficiency of data management within information systems. Under this dimension of supply chain governance, we examine the information systems that are implemented in the supply chains, and study the connections and linkages between the systems. Based on the state of implemented information systems, their connectivity, and the efficiency of data management, from a technical perspective, supply chain governance can be classified into poor, satisfactory and excellent (Sanders and Premus, 2002).

The advanced technical dimension of supply chain governance characterizes the process of information sharing among supply chain members. More specifically, we distinguish between the type of information shared such as, transactional, operational and strategic information. Secondly, we examine the frequency of information sharing between the supply chain members. Finally, we analyze the extent to which collaborative usage of the shared information affect decision making.

The relational dimension of supply chain governance analyzes information sharing behaviors from a socio-political perspective based on factors such as trust, length of relationships and bargaining power among supply chain members. Trust strengthens supply chain relationships, motivates firms to invest into long-term relationships, reduces uncertainty, fosters satisfactions and allows firms to establish information sharing routines (e.g., Zaheer et al., 1998).

Supply chain governance competencies enable firms to align their processes, prevent conflicts in inter-firm relationships, improve information sharing, and therefore gain a competitive advantage (e.g., Ghosh and Fedorowicz, 2008). Table 1 provides an overview of the three dimensions of supply chain governance.

<table>
<thead>
<tr>
<th>Technical</th>
<th>Advanced technical</th>
<th>Relational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implemented information systems</td>
<td>Type of shared information</td>
<td>Trust</td>
</tr>
<tr>
<td>Connections between systems</td>
<td>Frequency of information sharing</td>
<td>Relationship length</td>
</tr>
<tr>
<td>Data management</td>
<td>Decision making</td>
<td>Bargaining power</td>
</tr>
</tbody>
</table>

Table 1. Different Dimensions of Supply Chain Governance

3 Research Methodology

For this research a qualitative multiple-case study was chosen to explain information sharing patterns in retail fashion supply chains (Lee and Baskerville, 2003, Yin, 2009). Considering the guidelines from Myers and Newman (2007), we developed a semi-structured interview guideline from literature and executed a pre-check with five supply chain management consultants from a multinational consulting firm. This pre-check resulted in a reduction from 37 questions to 32 questions and ensured the right focus, an ordered structure of the questions and extensive coverage of the topic. Additionally, prior to administering the semi-structured interview guideline, they were checked by two independent researches not involved in the research; this process ensures construct validity (Yin, 2009).

For the case studies, 59 managers from 38 firms in the fashion retail industries were contacted via social networks, E-Mail and phone. Four firms were willing to support our research. Within the four firms, we identified five relevant interview partners from the top management and senior management level. The interviewees were chosen for their knowledge and responsibility for their firm’s supply chain management. The one-on-one interviews were undertaken partly personal, partly over phone and took place from the 16th January 2012 to the 18th June 2012 in the UK and in Germany. Each interview was audio-taped and lasted about an hour, on average. Additionally we reviewed internal documents about the material flows and information flows. In order to clarify statements, which were either unclear or in conflict with the documents, we conducted follow-up conversations with three
interviewees from two firms via E-Mail. After thirteen interviews including the follow-up process and the pre-check, saturation was reached, giving us the confidence in our results as no additional critical enrichment of our data could be achieved (Eisenhardt, 1989, Yin, 2009, Thietart, 2001).

In order to ensure the quality of our research design, we ensured construct validity, internal validity, external validity and reliability of our findings (Yin, 2009, Lee and Baskerville, 2003, Eisenhardt, 1989). We derived ten code words from the three dimensions of supply chain governance followed by a transcription and coding of the interviews using the software MAXQDA. Furthermore, to ensure the reliability of the results, the transcripts were independently coded by two researchers, allowing us to perform a qualitative content analysis (Krippendorff, 2004). Moreover, we ensure internal validity by addressing the tactic of rival explanations and independently analyzed interviews. By limiting the research domain to fashion retail supply chains and using replication logic, we additionally ensure external validity of our findings. Finally, the structured interview protocol and interview transcripts were used to assure the comparability of findings, enabling us to gain greater insight into fashion retail supply chains and their practices of information sharing. By ensuring compliance with the validity requirements for case studies, we are able to generalize from an empirical description towards propositions for information sharing in supply chains (Yin, 2009, Lee and Baskerville, 2003, Eisenhardt, 1989).

4 Results of the Case Studies

This section presents the results of the case analyses to explain differences in information sharing behavior among supply chain members. The four apparel firms are referred to as Alpha, Beta, Gamma and Delta, in order to meet confidentiality requirements. The four analyzed firms offer high quality fashion products within the medium (Alpha, Beta and Gamma) and premium (Delta) price segment. Further, while Alpha, Gamma and Delta mainly offer clothes and some accessories such as perfume and bags, Beta offers a wide variety of products from clothes over shoes to bags for all kind of activities. Despite that difference, all four firms focus on selling clothes.

The headquarters of all firms are located in Europe. However their production facilities and suppliers are mainly located in Asia. The only exception is Beta, which finalizes variants for some special products in Europe. Furthermore, firm Beta has more than 300 suppliers, where more than two third are located in Asia; the rest is spread over America, Europe and Africa. The number of suppliers from firms Alpha, Gamma and Delta range from about 35 suppliers (firm Delta) to 130 suppliers (firms Alpha and Gamma). Despite the differences, all firms use similar distribution channels, including own retail shops, e-commerce, wholesale and franchise. Furthermore, Beta and Gamma also have factory outlets and Beta invests in joint ventures with other firms. The main customer base of the firms is located in Europe, America and Asia.

Beta is the largest firm in terms of revenues and number of employees, while Delta is the smallest firm. Table 2 provides further details of the cases.

<table>
<thead>
<tr>
<th></th>
<th>Employees</th>
<th>Revenues (in Mio. Euro)</th>
<th>Revenues/Employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>1,200</td>
<td>350</td>
<td>291,667</td>
</tr>
<tr>
<td>Beta</td>
<td>46,000</td>
<td>12,000</td>
<td>260,870</td>
</tr>
<tr>
<td>Gamma</td>
<td>6,600</td>
<td>2,000</td>
<td>303,030</td>
</tr>
<tr>
<td>Delta</td>
<td>400</td>
<td>70</td>
<td>175,000</td>
</tr>
</tbody>
</table>

Table 2. Further Details on the Four Firms
4.1 Technical Supply Chain Governance

We analyzed the basic technical setup of information systems and the information management efficiency within the firms summarized in Table 3. We found that all firms except Alpha use enterprise resource planning (ERP) systems to share information with their suppliers. Beta and Gamma use SAP system, while Delta uses Intex, an ERP system specially developed for the apparel industry. However, a poor implementation of (the Intex) modules and an unsatisfactory user-interface results in poor information sharing processes and negatively affects the efficiency of internal business processes.

“[…] no one likes to work with the system. It has been introduced, and now there is no other chance than to accept it.” (Delta, Paragraph No. 28)

The use cases and deployment of ERP systems within the firms varies. Delta uses Intex to share only transactional information. In contrast, Beta makes use of all standard ERP modules, while Gamma uses its ERP system mainly for purchase orders. The aligned system and modules in Beta ensure no media disruption and allow operational and strategic information sharing. Beta also uses an add-on for retail supply chains from the same vendor. Moreover, Beta deployed the business intelligence and forecasting modules from SAP to ensure an easier and faster report compilation as several reports are pre-defined, and can be used as template for further reports.

“[…] we have the Business Intelligence module from SAP to create reports […] some important reports are already pre-defined […].” (Beta, Paragraph No. 252)

Alpha has no ERP system implemented yet and they share transactional and operational information with their suppliers via E-Mails using Excel files. This also implies that all information is internally shared and exchanged via E-Mail, phone and fax. Therefore, it can be assumed that the understanding of the effect of information sharing on supply chain performance is low as reflected by the usage of stand-alone solutions and internal and external information sharing processes.

“We currently have no supply chain management software. […] We work with Excel […]. Information Sharing is done via E-Mail, phone and Fax.” (Alpha, Paragraph No. 58, 60, 66)

<table>
<thead>
<tr>
<th>Technical Supply chain governance</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implemented information systems</td>
<td>No ERP system</td>
<td>SAP, SAP Retail, SAP BI</td>
<td>SAP</td>
<td>Intex</td>
</tr>
<tr>
<td>Connections between systems</td>
<td>E-Mail, Fax, Phone</td>
<td>EDI, Fax, Phone</td>
<td>E-Mail, Fax, Phone</td>
<td>E-Mail, Fax, Phone</td>
</tr>
<tr>
<td>Data management</td>
<td>Poor</td>
<td>Excellent</td>
<td>Satisfactory</td>
<td>Poor</td>
</tr>
</tbody>
</table>

Table 3. Comparison of the Technical Supply Chain Governance Dimension

4.2 Advanced technical supply chain governance

The analysis of the second supply chain governance dimension reveals different information sharing behaviors among supply chain members (see Table 4). Gamma and Delta share only transactional information with their suppliers, while firm Beta shares operational and strategic information such as production schedules. Alpha stated that they share operational and strategic information; however, they were not willing to share further details. Therefore, this statement has to be considered with caution.

“[…] basically order information and forecast information is shared.” (Alpha, paragraph No. 112, 116)
Although the type and level of exchanged information vary, the frequency of information exchange among all investigated firms is the same. All firms contact their suppliers several times a day to forward purchase orders, instruct changes and check the status of the production.

“Information is shared on a daily basis, and when it is necessary.” (Alpha, paragraph 66); “[…] we have a daily information sharing process.” (Delta, paragraph 72)

The degree of decision making differs among the four supply chains. In the case of Beta, the long-term suppliers and Beta collaboratively decide on replenishment and forecasting figures. However, the other three firms do not see any value in collaborative decision making.

“[…] we will share any information which is needed to supply the goods on time, but we do not see any additional value to share Point-of-Sales-Data.” (Alpha, paragraph 18)

<table>
<thead>
<tr>
<th>Advanced technical supply chain governance</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of shared information</td>
<td>Transactional, operational, strategic</td>
<td>Transactional, operational, strategic</td>
<td>Transactional</td>
<td>Transactional</td>
</tr>
<tr>
<td>Frequency of information sharing</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Decision making</td>
<td>No collaborative decision making</td>
<td>Collaborative decision making</td>
<td>No collaborative decision making</td>
<td>No collaborative decision making</td>
</tr>
</tbody>
</table>

Table 4. Comparison of the Advanced Technical Supply Chain Governance Dimension

4.3 Relational Supply Chain Governance

The relational supply chain governance analysis focuses on the importance of trust, bargaining power and long-term relationships on information sharing (see Table 5). Our data suggest that long-term relationship within the supply chains from Alpha and Beta foster strategic information sharing, where strategic information sharing is characterized, i.e., by the access to inventory data and point-of-sales data.

“[…] you have Point-of-Sales data as reference (for forecasting) from the last periods that kind of information sharing happens for sure.” (Beta, paragraph 36)

Furthermore, we found that the type of shared information varies, depending on the duration of the relationship. Beta mentioned strategic information sharing with long-term suppliers, while they share only transactional information with one-time suppliers.

“There are some specific suppliers […]. This (information sharing) depends on the suppliers and its clusters.” (Beta, paragraph 94)

In accordance with the finding from Dyer and Singh (1998), Alpha and Beta stated their interest in having fewer suppliers and invest in long-term relationships in order to mutually create value. From an information sharing perspective, strategic information is shared and enables supply chain members to increase flexibility and commonly improve lead times

“[…] in a volatile environment […] flexibility is important […] we have different categories of suppliers […] having flexible suppliers who are able to increase their production on short notice […].” Firm Beta, paragraph 76); “[…] certain processes (with long-term suppliers) can be adjusted towards reducing lead-times by 66% from 90 to 30 days.” (Beta, paragraph 181)”

Moreover, the relationship from Gamma and Delta with their suppliers can be differentiated from a bargaining power perspective. Delta is forced by its supplier to order a minimum quantity to get raw
material supplied, while firm Gamma can determine the details of the order, i.e., order quantity and delivery date.

“[...] the suppliers say if you want to have the drapery in your color [...] then you have to buy a minimum order quantity.” (Delta, paragraph No. 176)

However, in a weak buyer-strong supplier relationship the information sharing behaviors are not defined by the stronger partner. The suppliers from firm Delta are able to use their bargaining power to require minimum order quantities; however they are not able to influence the level of shared information from its customer. Firm Alpha, Beta and Gamma are in strong buyer-weak supplier relationships, and they determine the patterns of information sharing in the supply chain. This reflects that the level of shared information in a strong buyer-weak supplier relationship is governed by the stronger partner.

“We have defined order minimums and mechanism to work efficiently.” (Beta, paragraph No. 267)

Despite that, Gamma and Delta are not interested in long-term relationships and do not consider sharing operational or strategic information. We believe that this approach is manifested within the firms’ principles and culture.

“It is always dangerous [...] to allow external firms to look into it (information). [...] This is not good.” (Delta, paragraph 112, 116, 118, 120)

<table>
<thead>
<tr>
<th>Relational Supply chain governance</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>Trust with long-term suppliers</td>
<td>Trust with long-term suppliers</td>
<td>No trust</td>
<td>No trust</td>
</tr>
<tr>
<td>Relationships length</td>
<td>Long-term and short-term relationships</td>
<td>Long-term and short-term relationships</td>
<td>Short-term relationships</td>
<td>Short-term relationships</td>
</tr>
<tr>
<td>Bargaining power</td>
<td>Strong buyer</td>
<td>Strong buyer</td>
<td>Strong buyer</td>
<td>Weak buyer</td>
</tr>
</tbody>
</table>

Table 5. Comparison of the Relational Supply Chain Governance Dimension

5 Discussion

Based on evidence from the four cases, this study shows that the way information is shared between supply chain partners varies thus indicating that firms differ in terms of their supply chain governance competencies. It is important to note that for relational supply chain governance, bargaining power aspects and incentive structures are important, and in particular, incentives need to be aligned to enable information sharing. This finding helps explain the conflicting results regarding the relationship between information sharing and performance in previous studies examining supply chains only from a technical perspective (e.g., Ketchen and Hult, 2007, Prokesch, 2010). By ignoring the relational dimension of supply chain governance, and focusing only on the technical dimension, previous studies showed conflicting findings when two firms were similar in their technical supply chain governance.

Our findings are also consistent with those of previous researchers who have argued that user acceptance of (inter-organizational) information systems is crucial (Davis, 1989). While information systems can be seen as an enabler for information sharing efficiency (Premkumar, 2000), its usage is not a sufficient condition for sharing information. Our data suggests the importance of supply chain knowledge on information sharing. More specifically, the knowledge about information sharing processes, its possibilities and the positive impact of information sharing on supply chain performance differs among supply chain members. We found that firms share transactional information on a daily
basis, while operational and strategic information sharing depends on the (collaborative) approach of the stronger firm (e.g., Argyres and Liebeskind, 1999).

Although Alpha and Beta are the stronger partners, their information sharing behaviors differ. Beta mutually shares operational and strategic information with trustworthy long-term suppliers, whereas no information is shared with the other suppliers. Beta has also established a collaborative planning process for its long-term suppliers and institutionalized rules and norms. Interestingly, Alpha unilaterally shares operational and strategic information, although they have no interest in a collaborative planning approach. In our opinion, this can result in unaligned supply chain governance structures that negatively affect the supply chain performance. By sharing information without the design and alignment of collaborative processes, firms are not able to realize the benefits of mutual information sharing.

In contrast Gamma and Delta share no information. Gamma has no interest in a collaborative approach or long-term relationships, but due to its bargaining power Gamma can oblige the suppliers to comply with the given requirements. Despite its weak bargaining power, Delta is neither interested in a collaborative approach, nor in long-term relationships with its suppliers, therefore resulting in no information sharing. Although suppliers have a stronger bargaining power position compared to Delta, the suppliers do not demand upstream strategic information sharing, which can be considered as expectations for future business (Heide and Miner, 1992).

The results of the analysis indicate that supply chain governance competencies can determine mutual information sharing. More specifically, relational supply chain governance delineated by bargaining power and socio-political factors such as trust influence information sharing. We employ a more nuanced view towards supply chain governance by going beyond a primarily technical focus of analysis adopted in previous research. Since previous studies often focus on only the technical dimension, their arguments may be incomplete, and further research on understanding patterns of information sharing from a relational dimension is needed.

The four cases enabled us to explore different information sharing behaviors among supply chain members. Furthermore, the case studies offer insights that clarify the inconsistencies emerging from previous research on the information sharing processes. We found that technical supply chain governance dimension has no influence on the decision to share information (or not), but rather influenced the efficiency of information sharing. We identified supply chain knowledge, trust and bargaining power as important aspects that influence information sharing behavior. Furthermore, we found that bargaining power of firms is used to manage and govern the information sharing strategy for supply chains. Accordingly, we propose

- **Proposition 1:** In supply chain relationships, irrespective of bargaining power differences, there is no information sharing without aligned supply chain governance mechanisms.
- **Proposition 2:** In a strong–weak relationship, the stronger partner dictates the information sharing strategies.
- **Proposition 3:** In a strong-weak relationship, aligned supply chain governance mechanisms results in mutual information sharing.

6 Limitations

The contribution of this paper should be interpreted in the face of its limitations. First, only one major factor – supply chain governance has been used to analyze and explain differences in information sharing in supply chains (e.g., Mithas et al., 2011, Lee et al., 1997). Future research could consider cultural factors, inter-firm learning processes and supply-chain specific investments to explain differences in information sharing (e.g., Doz, 1996, Dyer and Nobeoka, 2000). Second, we found that bargaining power is used differently in supply chains to establish information sharing processes
depending on the position of the firm in the network. This could be an interesting direction for future studies to explore under what conditions the influence of bargaining power would have an impact on information sharing (Nair et al., 2011). Further, all the cases analyzed are from the retail sector. While this allows us to control for cross-industry variations, the findings from this study should be extended with caution to other industries. An exploration of supply chains in other industries could be used to validate and fine-tune the propositions. This is especially true as case studies do not allow researchers to control events and might capture only contemporary events (Yin, 2009). Finally, it could be interesting and worthwhile to investigate information sharing processes using other theoretical perspectives such as game theory or a community learning perspective (e.g., Parkhe, 1993, Straub et al., 2004, Ketchen and Hult, 2007, Prokesch, 2010).

7 Conclusion

This research contributes to theory by analyzing the supply chain governance competencies of firms in fashion retail supply chains using exploratory case studies to explain differences in information sharing behavior. Our findings can allow practitioners to improve their understanding of information sharing and develop information sharing strategies and guidelines for managing, governing and improving information sharing. More specifically, we explain different information sharing strategies and illustrate the positive relation of collaborative planning solutions and trust (i.e., relational factors) on mutual information sharing. Practitioners should align incentives, to optimize overall supply chain performance and compete through the formation of alliances.

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