

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Vertical Collaboration in the Supply Chain

Sanda Renko

*Faculty of Economics & Business
University of Zagreb
Croatia*

1. Introduction

Supply chain is a research area which has attracted the attention of many researchers for more than 20 years (Mehrerdi, 2009) due to costs and time involved in managing materials, information and financial flows from the point of origin to the point of consumption. The simplest definition of the supply chain suggests (Waters, 2003) that it consists of series of activities and companies that move materials through on their journey from initial suppliers to final customers. On that journey each company somehow is adding value to the product. However, due to an increasing competition on the market and due to more demanding and more sophisticated customers, the picture of supply chain is getting more complicated. If we take into consideration that many companies have crossed their borders and have included some geographically separate operations into their supply chain, it is very difficult to successfully integrate and to manage all related activities. In the praxis, it is normally that every company is working for its own benefit resulting in duplicating effort and reducing productivity, lowering efficiency, higher costs and decreasing the level of customer services. However, environmental uncertainty expressed through shortening product life cycle, expanding product proliferation, and more demanding customers requires from companies to coordinate production processes across company borders, to tackle problems from the viewpoint of the whole organization, and to look for the greatest benefit of all chain members.

Namely, organizations' opportunities for value enhancement and cost reduction are clearer when they look beyond their own operations. Supply Chain Management is built on the principles of partnerships, the development and use of the connections that exists between the links of the chain to provide information that will increase the efficiency of all members in the chain (Helms et al., 2000). If it is successfully developed over a period of time, those partnerships lead to collaboration. In other words, collaboration is focused on relationship between all supply chain members and it requires the availability of integrated information and the high level of motivation and trust as well. There are two dimensions of collaboration that may exist in the supply chain: vertical collaboration between suppliers and customers, and horizontal collaboration between competitors and other supply chain actors.

This chapter focuses on the vertical collaboration which is more common and easier to implement than horizontal collaboration. The chapter is structured as follows. It will begin with the theoretical background where the insight into definitions of collaboration in the supply chain, types of collaboration, motives for implementing it, benefits of its usage, the

discussion about the necessary prerequisite, and limitations for the successful collaboration between supply chain partners are given. In order to illustrate what needs to be done to synchronize all supply chain activities and to establish successful integration among suppliers and their customers (i.e. retailers and wholesalers), the results of the research study among Croatian companies are shown.

2. Theoretical background

Ayers and Odegaard (2008) argue that there are many definitions of supply chain, depending on the viewpoint of the author of the definition. According to them, common viewpoints define supply chain as the procurement only, distribution, or as a collection of information system applications. On the other side, Ayers (2006) gives more precise definition of supply chain as the product life-cycle processes comprising physical, information, financial, and knowledge flows whose purpose is to satisfy end-user requirements with physical products and services from multiple, and linked suppliers. If we consider the number of business entities which are involved in above mentioned activities and processes, it is obvious that there are potential areas for cost increasing and profitability decreasing. However, in today's competitive market, supply chain should efficiently integrate suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time in order to minimize system wide costs while satisfying service-level requirements (Simchi-Levi et al., 2004). All companies along the supply chain - suppliers, transport companies, warehousing, etc. - have the same goal: to satisfy the customer. They move toward the traditional view where each company is focused on its own business objectives disrupting the flow of materials, goods and information and increasing costs. Thus, they co-operate in the chain looking for a more efficient flow of materials through the chain, for faster deliveries, and reduction of stock levels, for quick response to customer changing demands, etc.

Accordingly, they have to overcome typical supply chain and move towards collaborative supply chain.

Collaboration is defined as two or more companies sharing the responsibility of exchanging common planning, management, execution, and performance measurement information (Anthony, 2000).

Lambert et al. (1996) summarised three key factors that contribute to a successful partnership in the supply chain, such as: 1) drivers (the compelling reasons for forming partnerships, such as cost reduction, better customer services, etc.), 2) facilitators (the supportive corporate factors that encourage partnerships, such as similar management style, compatibility of operations, etc.); and 3) components (the join activities and operations used to build and sustain the relationship, such as communication channels, investments, etc.).

Supply chain costs that include production, inventory, distribution, marketing and selling costs are often cited in the literature as major factors influencing the implementation of supply chain collaboration (Saha, 2004). The supply chain environment with large number of root causes for costs is possible calls for collaboration between supply chain partners. Ayers and Odegaard (2008) state that majority of waste examples in the supply chain can be tracked to one or more of root causes: 1) variability root cause which includes anything in the supply chain that creates uncertainty in operations (missed deliveries, demand fluctuations, poor quality material, etc.); 2) product design cost which includes wrong decisions related to material choices, component obsolescence, suppliers, etc.; 3) insufficient

information sharing which implies failures to provide or/and to manage information; 4) weak links which relates to poor relationships between supply chain members; and 5) unintended consequences which may result in cost raising practices somewhere in the chain. Therefore, the need for supply chain collaboration is obvious, as it provides (Waters, 2003): improved performance (due to more accurate forecasts, better planning, higher productivity of resources, rational priorities), improved material flow, better customer services with shorter lead times and faster deliveries, standardised procedures, becoming routine and well-practices with less duplication on effort and information, and so on.

There are two dimensions of supply chain collaboration (Barratt, 2004; Mangan et al., 2008):

- a. vertical collaboration which includes collaboration between suppliers and customers,
- b. horizontal collaboration which includes collaboration with competitors and other supply chain actors, e.g. in sharing manufacturing capacity.

Vertical collaboration is more common and easier to implement than horizontal collaboration, but they are not exclusive ones. Supply chains that achieve both vertical and horizontal collaboration would gain significant business benefit.

3. Understanding the reasons and preconditions for vertical supply chain collaboration

It is widely approved that collaboration and partnering between firms is an increasingly common approach for enterprises to discover and to sustain shared competitive advantages (Mentzer, 1999). However, the implementation of this concept does not provide benefits to enterprises involved in the flow of materials between suppliers and customers, yet it leads to the win-win-win situation with focus on consumers.

Collaboration is the result of a joint effort of the supplier and the retailer to attain mutual benefit and it does not happen overnight. Therefore, some preconditions for successful vertical collaboration should be obtained (Deloitte, 2008):

- financial conditions - trade terms relating to cost reduction and joint profitability,
- relationship characteristics - personal relationships, mutual trust, interdependency and commitment,
- compatibility of strategies - jointly developing goals and strategies,
- effective negotiations - efficiently use the negotiating time and active participation during negotiations,
- quality of account management - account managers need to have the relevant facts and figures to hand, and to be well aware how their company performs.

The greatest value derived from better supplier-buyer relationships is more satisfied customer, because when chain members begin to collaborate to solve possible problems and pitfalls in the chain, and to improve service, the customer is the final winner.

Christopher (1996) summarizes situation on the market by saying that “supply chains compete, not companies”, because the opportunity to reduce costs and to enhance customer value is the basis of the interface between supply chain members. However, there are some difficulties to achieve efficient supply chain collaboration. Many organisations simply do not trust other members of the supply chain and they are reluctant to share information (Waters, 2003). Traditional business relationships, which have been built on open market negotiations, need time to convert to a trust-based win-win situation in a supply chain (Mangan et al., 2008). Figure 1 shows “step-by-step journey” needed for the development of collaboration.

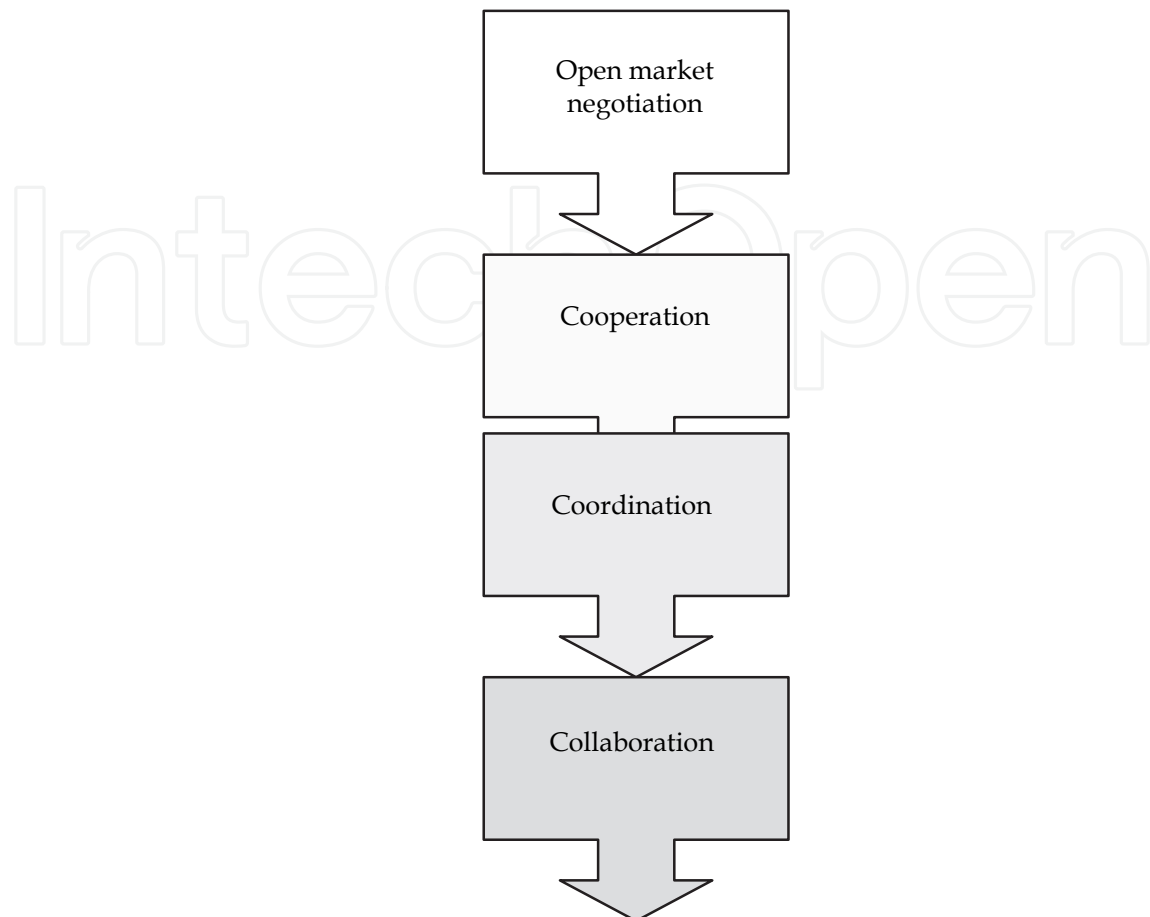


Fig. 1. The journey from open market negotiations to collaboration (Spekman et al., 1998)

Additionally, supply chain characterizes different activities, different organisations, different skills, geographical dispersion, etc., and it is very difficult to create a successful linkage within a supply network. Generally, a chain is constructed as hybrid network between independent companies (Reese, 2004) and it is intended that the companies involved in such a network work together. The efficiency of the whole supply chain of independent companies is based on a close cooperation of all chain members. Traditional customer and purchase orders are replaced with collaborative demand/order forecasts and an automated replenishment order flow (Friedman & Belkin, 2003)

Relationship between supply chain members leads to some benefits for the chain members and for the final customers as well. Some of the most important benefits are:

- improved communication and information sharing,
- elimination of activities that waste time or do not add value,
- balanced operations and lower stocks,
- more accurate forecasts and better planning,
- improved material flow,
- better customer service, with shorter lead times and faster deliveries,
- more flexible organisations reacting faster to changing conditions, etc.

Collaboration is very often recognized as an information sharing directed to sharing of production and inventory data, market places for buying and selling, and production planning along the supply chain (Ayers & Odegaard, 2008). It is widely discussed that the information technology revolution and the exchange of information are the foundation of the collaboration (Pooler et al., 2004). Mentzer, Foggin and Golicic (2000) found out that supply chain executives believed that advanced technology was essential to the success of collaborative supply chain relationships. Information technology enables collaboration by providing the necessary tools that make collaboration feasible and by supporting collaborative interorganizational relationships (Esper & Williams, 2003). However, information technology in and of itself is not enough to lead to successful collaboration (Mentzer, et al., 2000) because human factor lies behind everything. Namely, only well-educated employers, that know how to use information technology, will provide true benefits of information system.

Lapide et al. (2002) describe collaboration as a three-stage process which begins with simpler form of information sharing that are relatively easy to automate, and finishes with joint decision making and win-win partnerships across network.

Partnership that derives from supply chain collaboration could become a source of innovation. New process technologies entail collaboration because they require installation of technical capabilities all along the retail supply chain.

The development of the relationship between trading partners can be divided into three levels:

1. Initial level of collaboration, where chain members exchange information mostly to complete day-to-day transactions,
2. Cooperative collaboration, where chain members have simultaneous access to information needed,
3. Cognitive collaboration, where chain members share information to jointly gain knowledge in order to joint decision making.

Retailers make effort to build longer-term and better relationships with their suppliers. There have also been changes in the style and the technology of supplier-retailer interactions. The fact is that the larger retailers have sought to extend their control over the supply chain and move away from the use of the wholesaler (Gilbert, 2003). The size of market share gives large retailers power over suppliers to negotiate prices and to absorb the role of the former wholesale intermediary, while ensuring the quality and service of product to the customer.

Collaboration provides a number of potential opportunities for vertical supply chain collaboration on the downstream as well as on the upstream side of the supply chain (Barratt, 2004). On the downstream side of the supply chain we can find: customer relationship management (CRM), collaborative demand planning with collaborative forecasting, demand replenishment, and shared distribution. On the upstream side of the supply, there are: supplier relationship management, supplier planning and production scheduling, collaborative design, and collaborative transportation.

4. Vertical collaboration methods

It is generally accepted that the main purpose of the retailer is to satisfy consumers better than its competitors. In order to achieve this purpose, retailers have to provide an assortment of “right goods to the right places at the right time for the least cost” (Kotler &

Kevin Lane, 2006). In the past, retailers have used a large number of suppliers and they were competing against each other for individual order. The current trend is to reduce the number of suppliers and to develop long-term relationships with a small number of them. Each supplier has different capabilities and retailer select them based on a supplier selection software package. They follow some of assessment criteria in four main areas, together with the kind indicators that would determine the likelihood of a supplier meeting these criteria (Varley, 2003) such as:

- product range and quality with the quality and variety of products available, where the retailer assesses the supplier’s production specialisation and flexibility, design capability, technical capability, etc.,
- prices of products and discounts available for large quantities and for rapid payment, where the retailer assesses the supplier’s financial stability, willingness to negotiate, scale economies, etc.,
- delivery in accordance with the retailer’s specification in terms of timing, quantities and product variety,
- service by which a supplier is adding value to the retailer, where the retailer assess the supplier’s speed of new product introduction, its handling of queries and complaints, etc.

Introducing a supplier rating system for measuring mentioned criteria, a retailer has the opportunity to rationale its supply base. Furthermore, a retailer facilitates communication and develops closer relationships with suppliers. They tend to retain their autonomy yet move the business together by forming supply “partnership”. Table 1 summarizes the transactional vs the partnership approach characteristics in retail supply.

Transactional approach	Partnerships approach
short term or one-off many suppliers and buyers disloyalty and lack of commitment low switching costs, little or no investment made in relationships loose or no procedures exchange centred on single person in firm changes in customer/supplier make little difference	long term and on-going few suppliers and buyers loyalty and commitment high switching costs, significant investments will have been made in the partnership strict procedural guidelines many people and departments involved in exchanges change in customer/supplier causes disruption

Table 1. Transactional vs partnership approach (Varley, 2003)

A time progresses, those partnerships lead to collaboration and to higher level of operational efficiency. In this new collaborative environment each supplier gains a share of the total orders based on their ability to deliver the order on time and to specifications (Mangan, 2008). However, rather than searching for new suppliers, retailers are more likely to increase business with the existing supply base, which has already made some changes in order to adapt their products and services to retailers. Some initiatives that will improve retailer-supplier relationships are shown in Table 2.

Companies that want to build holistic relationships with selected suppliers across the chain raise their revenue and lower costs (Booz & Company, 2009). There is a wide spectrum of

possible collaborative measures that can improve efficiency, raise revenues, and cut costs for both retailers and their suppliers (Table 3).

<ul style="list-style-type: none">• The supplier’s understanding of the retailer’s target customer and the brand image that the retailer is trying to build.• Detailed feedback on sales from the retailer to the supplier.• Co-operation and co-ordination in marketing activities.• Sharing of information on relevant consumer and product/market trends.• Commitment of businesses to one another, including combined forward planning, store space dedicated to supplier’s ranges, provision of point of purchase materials and fixtures for the retailer, retailer involvement in product development.• System integration to facilitate information sharing, including sales data, stock and delivery information.• An understanding of the retailer’s quality standard requirements, including product quality and compliance on delivery and administration.

Table 2. What can improve relationships between retailer and its supplier? (Varley, 2003)

Revenue/margin enhancement	Process improvement	Cost reduction
<ul style="list-style-type: none">• Increasing penetration of core products• Building multiyear strategies to grow/build the category• Managing/reallocating shelf space and products• Driving consumer convenience and impulse shopping• Collaborating more closely with private labels	<ul style="list-style-type: none">• Launching new products collaboratively• Improving effectiveness of marketing efforts• Jointly improving promotion planning and management• Practicing life-cycle management• Utilizing POS data and improving on-shelf availability• Improving demand forecasting	<ul style="list-style-type: none">• Decreasing shortage• Enhancing distribution efficiency• Redesigning display operating model• Optimizing the role of merchandisers• Reducing returns• Improving efficiency through supply chain improvements

Table 3. Collaboration levers for enhanced profitability (Booz & Company, 2009).

5. Limitations to vertical supply chain collaboration

Supply chain collaboration has proven difficult to implement (Sabath & Fontanella, 2002) due to a number of elements necessary to support collaboration such as (Barratt, 2004):

- Trust -defined as a willingness to rely on an exchange partner in whom one has confidence (Moorman et al., 1992). Trend of private labels and raising retailers’ ability to manage them may cause the lack of trust between the manufacturer and the retailer, because premium-brand manufacturers introducing new products and concepts are

afraid that their ideas will be taken over and used by retailers for their private-label products (Deloitte, 2008).

- Mutuality –reflected through mutual benefits and risk sharing among chain members.
- Information sharing - relied on the transparency and quality of information flows between buyers and suppliers. However, there has been an over-reliance on technology in trying to implement it (McCarthy & Golocic, 2002).
- Communication and understanding – related to the importance of clear and broad lines of communication in the whole chain that will contribute to faster information sharing between supply chain partners.
- Openness and honesty – resulted in high level of trust, respect and commitment.

Collaboration is not just about developing closer relationships between supply chain members, but also needs to identify with whom to collaborate with. Sabath and Fontanella (2002) suggest that the problem in the efficient implementation of supply chain collaboration is a great failure to differentiate between whom to collaborate with. Therefore, another problem in the collaboration appears and is related to a lack of trust between trading partners (Ireland & Bruce, 2000). Gattorna (2003) propose “segmentation” approach in the context of successful collaboration. This segmentation approach should be conducted on the downstream as well as on the upstream side of the supply chain. Namely, company has to segment its suppliers and customers and to intensify its relationships with a small number of strategically important customers and suppliers. Barratt (2004) argue that if customers can be segmented by way of their buying behaviour and service needs, then separate supply chains can be designed to meet the specific needs of the various customer segments. Moreover, suppliers could be segmented according to their abilities and requirements to service the segmented supply chain (Barratt, 2004). Additionally, one of these segments may be appropriate for a collaborative approach, whereas more distinctive approach may be suitable for other segments.

Booz and Company (2009) found main limitations of retailer-supplier partnerships and collaboration in the traditional retailers’ tension to view their value purely as a means of extracting lower prices or promotional support from their suppliers. It should be noted that such maintaining of relationships often caused low in-store availability. Restricted communication like that eliminates the possibility of partnerships which can put the negotiation level and to add value to the whole supply chain.

Friedman and Belkin (2003) point out that order forecasts are the key preconditions for the integration and the coordination of supply chain processes of partners in the chain, but also that sharing demand forecasts alone cannot optimize manufacturing flexibility or enable a make-to-order manufacturing process.

6. The research on the level of vertical collaboration in the supply chain

For the purpose of this chapter, a research study examining the level of collaboration between retailers and their suppliers, tools necessary to establish successful relationship between them, benefits and/or problems raised from the partnership between those two sides, years of the partnership between retailers and their major suppliers, etc. on the Croatian market was conducted. But for the purpose of better understanding of the environment where the research was carried out, the main characteristics of Croatian retailing should be presented.

6.1 An outline of retailing in Croatia

The retail industry is a significant part of the Croatian national economy. It generates EUR 15,329 mil. in revenue and employs 145,472 persons which accounts for almost 10% of the total active workforce (own calculation based on data in RCCBS First release, 23rd September, 2009.) Croatian market is dominated by a limited number of multiple-outlet retailers. The Croatian retailing counts 37,353 outlets of various formats (RCCBS First release, 23rd September, 2009). Nowadays, among the main characteristics of Croatian retailing are concentration, internationalization and consolidation, with 71.4% of the market held by 15 retailers (compared to 16.6% of the market held by 10 retailers in 2002). On the first place, with 25.8 per cent market share domestic retailer, Konzum is the market leader. It has been followed by international chain stores such as: Schwartz Group (Germany) with Kaufland stores and Lidl stores; Rewe Group (Germany) with Billa stores; Spar (Austria); Ipercoop (Italy) and Mercator (Slovenia). Renko (2008) and Knezevic (2003) note that international retailers have introduced new standards and know-how to the domestic market, including new technology, a more customer-focused orientation, and an environment-friendly approach.

6.2 Questionnaire design

The questionnaire consisted of three parts. Part I relates to the domain of the strategic integration construct, dependence, flexibility, relationship quality, continuity expectation, and supply chain collaboration tools. 31 items are created based on Cassivi (2006), Johnson (1999) and Morgan and Hunt (1994). The respondents indicated their level of agreement on a 5-point Likert scale with strongly disagree (1) and strongly agree (5) as the anchors.

Part II of the questionnaire consists of 6 statements related to performance of the company. Statements were adopted from the study of Johnson (1999). A 7-point Likert format (1=much poorer than expected and 7= much better than expected) was used to assess the level of commitments of retail managers to the statements relating to effects of partnerships with suppliers. Here, respondents were asked to evaluate their firm's performance on sales, information flows, customer's satisfaction level, time reduction, business flexibility and inventory level which arose as the result of the supply chain collaboration. Part III of the questionnaire required some information on the companies in the sample, such as assortment, number of employees, number of suppliers, number of key suppliers, the length of the cooperation with key suppliers, etc.

6.3 Sampling procedure

50 Croatian retailers with different assortment were included in the sample. There were no special criteria in selecting the retailer, but the respondents were chosen based on their specialized knowledge of and experience with supply chain relationships, and their role in the procurement or sales activities carried out in the supply chain. The method used in this study was an e-mail based structured questionnaire. The companies chosen were retail companies dealing with food and non-food assortment. Similar to Coltman (2007) pre-survey telephone calls were made at each participant to identify whether they would be prepared to participate in the survey or whether they could provide contact details for the most appropriate person in the firm. The research was conducted in the period February - March 2011.

A total of 50 completed questionnaires were received, but three questionnaires were eliminated due to a large number of unanswered questions. The collected data were analyzed using SPSS. Except from descriptive statistics calculations, testing the reliability

with Cronbach's Alpha coefficient was conducted. Before using items for further analysis, the reliability testing was conducted. The value of 0.81 for statements related to relationship quality, supply chain collaboration tools, dependence, etc. and the value of 0.86 for statements related to the performance of the company as the result of the collaboration with key suppliers suggested very good internal consistency reliability for all scales used in this research (the recommended standard of 0.7 has been suggested by Nunnally (1978) and 1.00 represents perfect reliability). Since data were not normally distributed, a significance of the findings and the level of collaboration between retailers and their suppliers were explored using Spearman correlation coefficient.

6.4 The findings

The structure of the sample cannot indicate a satisfactory level of representativeness as the majority of responding firms are large companies with more than 500 employees (32.1 per cent of the sample) and small companies with 10-50 employees (21.4 per cent of the sample). There are mostly retail companies (57.1%), but the rest of the sample consists of companies that are involved in retail and wholesale business (42.9 per cent of responding firms). The analysis of the number of suppliers reveals that half of the sample operates with more than 200 suppliers. Among them, the largest percentage of the sample (35.7 per cent) has got 5-10 key suppliers on average and 10-20 years of relationships with their key suppliers (67.9 per cent of the sample).

The mean scores for the degree of collaboration items (from 4.25 to 4.50) are very high (on the scale from 1 to 5) suggesting that respondents are aware of the importance of collaborating with their major suppliers. The largest percentage of respondents (49 per cent) identified direct procurement (forwarding of purchase orders to pre-qualified suppliers) as the most important supply chain collaboration tool. Mean scores for the collaboration planning items (from 3.90 to 4.36) suggest that respondents highly evaluate the possibility to exchange the forecast information provided by the supplier and to improve innovativeness. Table 4 reveals main benefits of the collaboration between retailers and the suppliers. Table 4 shows that the positive impact on output measures, such as sale, has the highest average score.

Item	Mean	St.dev.
the collaboration has a positive impact on resource measures	4.18	0.819
the collaboration has a positive impact on output measures	4.39	0.951
the collaboration has a positive impact on on flexibility measures	4.11	0.737
the collaboration has a positive impact on the firm's market share	3.86	0.832
the collaboration has a positive impact on the market share of major supplier's products	4.36	1.079

Table 4. Vertical collaboration main advantages

However, the mean scores for flexibility and dependence are moderate to low. Dependence and flexibility scales were adopted from Johnson (1999). Dependence was measured with items based on replaceability, for example “if we could not buy our stock from our present major supplier, we would likely be purchasing from some other major supplier”. Flexibility was measured with items which assessed the retailers' perceptions of the degree to which they behaved flexibly in the relationships, such as „in our relationship with our major supplier, we are willing to make adjustments for any reasonable change as needed“. The

results point out high level of dependence and low level of flexibility in the case of the Croatian retailers. Namely, they are not ready to easily replace their product line with a similar line from another company (64.3 per cent of the sample) and to purchase from some other major supplier (64.3 per cent of the sample). Additionally, they are not willing to put aside contractual terms to work through problems raised by their major supplier (71.4 per cent of the sample) and to make adjustments for any reasonable change as needed (92.9 per cent of the sample).

As trust, and relationship commitment were recognized as the major supporting elements of collaboration in general (Barratt, 2004), respondents were asked about their perception of the importance and the quality level of the relationships with their suppliers. The mean scores for relationship commitment and trust (from 3.86 to 4.75) are very high suggesting that Croatian retailers intend to maintain the relationship which they have with their major supplier and that the relationship which they have with their major supplier is something they are very committed to. Finally, there is a high level of trust between investigated retailers and their major supplier.

In order to find out whether relationships between the retailer and its key suppliers may significantly affect performance, six-item performance scale was developed. The items are based on previous studies of Johnson (1999) and Morgan and Hunt (1994) and they are focused on the economic performance of the firm and the supplier's direct part in it. Correlation analysis (Table 5 in Appendix A) shows only moderate ($\pm 0,6 \leq r \leq \pm 0,4$) associations (Dancey & Reidy, 2007).

As we can see, there is a moderate positive association between the vertical collaboration (between retailer and its supplier) while developing strategy and improved inventory visibility in the supply chain. In other words, the more retailers consider their key suppliers in strategic decision making, the better is the visibility of inventories in the chain. Positive association between the importance for retailer to maintain the relationship with major supplier and inventory visibility is evident. Chi-square test suggests that all respondents confirmed those findings ($\chi^2 = 10,691$, $df=6$, $p=0,014$). There is also, moderate positive association between the direct procurement and capacity planning and inventory visibility. It is interesting to mention positive association between the collaboration planning items (reflected through the exchange of information between retailer and supplier and forecasting based on those information) and the improvement in the level of services in the supply chain and the inventory visibility as well. 32.1 per cent of the respondents completely agreed that flow of information between them and their major suppliers contributed to inventory visibility in the chain. Additionally, the collaboration has a positive impact on output measures, information and inventory visibility. More than a half of the sample (53.6 per cent and 53.5 per cent respectively) point out that the „supply“ partnership led them to improved inventory visibility and to increased flexibility in doing business. Moreover, it allows them to increase the service level and to reduce cycle time. Table 5 also shows moderate positive association between the level of trust between retailer and its major supplier and inventory visibility and cycle time reduction. Chi-square test suggests that 78.5 per cent of respondents highly evaluated the impact of collaboration on their economic performance ($\chi^2 = 14,940$, $df=6$, $p=0,002$). There is also moderate positive association between retailer's monitoring of every aspect of transactions with its major supplier (to ensure that nothing inappropriate happen) and the improved inventory visibility. 57.1 per cent of the sample answered that as more they monitor transactions with major supplier, the more visible inventories are.

But, it is surprisingly that in the market situation when all business subjects are aware that their customers are their most important value, study among Croatian retailers did not

confirm statistically significant relationship between all “basic” dimensions that portray the sampled companies’ profile and improved end-customer satisfaction which resulted from vertical collaboration in the supply chain. This finding does not correspond to previously mentioned theoretical assumption of more satisfied customer as the greatest value derived from better relationships between retailer and supplier. Namely, when chain members begin to collaborate to solve possible problems and pitfalls in the chain, and to improve service, the customer is the final winner.

As expected, correlation analysis showed strong positive association between some supply collaboration performance outcomes and improved end-customer satisfaction. Namely, improved information visibility and service levels (as the result of vertical collaboration) are strongly correlated to end-customer satisfaction ($r=0,702^{**}$, $p=0,000$ for information visibility; and $r=0,616^{**}$, $p=0,000$ for service levels). Logically, strong positive association ($r=0,690^{**}$, $p=0,000$) between increased flexibility in doing business which resulted from supply chain collaboration and end-customer satisfaction is present. In other words, the collaboration between retailers and their suppliers leads to efficient information flows and to higher level of services. Accordingly, increased flexibility in doing business is present. Finally, this win-win supplier-retailer relationship has got large positive effect on end-customers. In such a way, successful vertical collaboration can result in win-win-win situation for all chain members.

7. Conclusion

This paper is an attempt to reveal the importance of the collaboration between retailer and their suppliers in the supply chain. The fact is that today’s competitive pressure to improve efficiency and to deliver added value for customers, forced all members of the supply chain to change the way of their business relationships. As major players in the supply chain, both retailers and their suppliers have recognized benefits of their closer relationships and the need to transfer from the traditional relationship which has experienced a high level of conflict between chain members. Some of well-known initiatives of suppliers and retailers have included Efficient Consumer Response (ECR), and Collaborative Planning, Forecasting, and Replenishment (CPFR) (Booz & Company, 2009), but in the praxis, a broad-based strategic collaboration remains a rarity, and most retailers still do not consider building collaborative value a core activity.

It is widely accepted that collaboration improves performance, but collaboration between retailers and suppliers is still relatively limited (Deloitte, 2008). Today’s situation characterizes many retailers with their own labels. Therefore, they are increasingly coming into direct competition with suppliers: they are competing both for physical access to consumers and for consumers’ brand loyalty (which is limited) (Deloitte, 2008). In such a situation, there are objective conflicts of interest between vertical participants in supply chains. Everyone in the chain is seeking to appropriate value for themselves from participation and, assuming economically rational behaviour, must wish to appropriate more of the value for themselves if they are able to do so (Cox, 1999). The literature review suggests partnering between firms as an increasingly common way for firms to find and maintain competitive advantage (Mentzer et al., 2000) and to reduce inventory and other logistics costs for both retailer and its supplier. The study conducted in the case of the European country in transition, confirmed that Croatian retailers recognized the importance and benefits of the collaboration with their suppliers. They pointed out positive impact of vertical collaboration on their output measures and improved information and inventory visibility.

Given this, it seems clear that managers on both sides, on the retailer's and supplier's side as well, require a proper understanding how to select supplier partners and to share the benefits and costs of their joint initiative. Achieving effectively collaboration is not a one-size-fits-all process and requires improved level of negotiation and more holistic relationships between chain members.

8. Appendix A

Item		Spearman correlation coefficient
When developing our firm's strategy, we consider our major supplier as a large part of the picture	Supply chain collaboration improved inventory visibility	0,505**
It is very important for our company to maintain the relationship with our major supplier	Supply chain collaboration improved inventory visibility	0,569**
Direct procurement (formards purchase orders to pre-qualified suppliers)	Supply chain collaboration improved inventory visibility	0,533**
Forecasting – exchanges the forecast information provided by the supplier	Supply chain collaboration improved service levels	0,479**
	Supply chain collaboration improved inventory visibility	0,536**
Capacity planning – determines the amount of capacity required to produce	Supply chain collaboration improved inventory visibility	0,596**
The collaboration has a positive impact on output measures	Supply chain collaboration improved information visibility	0,512**
	Supply chain collaboration improved inventory visibility	0,552**
	Supply chain collaboration reduced cycle time	0,500**
The relationship that my firm has with our major supplier is something we are very committed to	Supply chain collaboration improved service levels	0,585**
	Supply chain collaboration improved inventory visibility	0,556**
	Supply chain collaboration increased flexibility in doing business	0,548**
	Supply chain collaboration reduced cycle time	0,508**
There is a high level of trust between us and our major supplier	Supply chain collaboration improved inventory visibility	0,507**
	Supply chain collaboration reduced cycle time	0,558**
We monitor every aspect of transactions with our major supplier to ensure that nothing inappropriate happen	Supply chain collaboration improved inventory visibility	0,633**
	Supply chain collaboration reduced cycle time	0,488**

** Correlation is significant at the 0.01 level (2-tailed)

Table 5. The effect of collaboration on performance

9. References

- Anthony, T. (2000), Supply chain collaboration: success in the new internet economy, *Achieving Supply Chain Excellence through Technology*, Montgomery Research Inc., San Francisco, pp. 41-44.
- Ayers, J.B. (2006), *Handbook of Supply Chain Management*, 2nd ed. Taylor & Francis Group, ISBN: 978-0849331602, Boca Raton, USA..
- Ayers, J.B. & Odegaard, M.A. (2008), *Retail Supply Chain Management*, Auerbach Publications, Taylor & Francis Group, ISBN: 978-0-8493-9052-4, Boca Raton, USA
- Barratt, M. (2004) Understanding the meaning of collaboration in the supply chain, *Supply Chain Management: An International Journal*, vol. 9, no. 1, pp 30-42, ISSN: 1359-8546.
- Booz & Company (2009) The Collaboration Game Building Value in the Retail Supply Chain, USA, accessed 20 March 2011, available from: www.booz.com
- Cassivi, L. (2006), Collaboration planning in a supply chain, *Supply Chain Management: An International Journal*, vol. 11, no. 3, pp. 249-258, ISSN: 1359-8546.
- Christopher, M. (1996) Emerging Issues in Supply Chain Management, Proceedings of the Logistics Academic Network Inaugural Workshop, Warwick, in: Waters, (2003), pp 34
- Coltman, T., (2007), Why build a customer relationship management capability?, *Journal of Strategic Information Systems*, 16, pp. 301-320.
- Cox, A. (1999), Power, value and supply chain management, *Supply Chain Management: An International Journal*, vo 4, no. 4, pp. 167-175, ISSN: 1359-8546.
- Dancey, C.P. & Reidy, J. (2007) *Statistics Without Maths for Psychology*, Pearson Education Ltd., ISBN: 978-0-132-05160-6, London.
- Deloitte (2008) Supplier/retailer relationships: A growing need for collaboration on both sides, accessed 20 March 2011, available from: http://www.deloitte.com/view/en_NL/nl/industries/consumer-business/3ab35915531fb110VgnVCM100000ba42f00aRCRD.htm
- Dyckhoff, H., Lackes, R. & Reese, J. (2004) *Supply Chain Management and Reverse Logistics*, Springer - Verlag Berlin - Heidelberg, ISBN: 978-3-642-07346-5, Heidelberg, Germany.
- Esper, T.L. & Williams, L.R. (2003), The Value of Collaborative Transportation Management (CTM); Its Relationship to CPFR and Information Technology, *Transportation Journal*, Summer, pp. 55-65.
- Friedman, T.H. & Belkin, G. (2003) Major Trends in North American CPFR Adoption, CPFR in North America, in Seifert, D. (2003), *Collaborative Planning, Forecasting and Replenishment: How to create a Supply Chain Advantage*, AMACOM, pp. 95-110.
- Gattorna, J. (2003), *Gower Handbook of Supply Chain Management*, Gower Publishing Company, ISBN: 978-0-566-08511-6, Burlington, USA.
- Gilbert, D. (2003) *Retail Marketing Management*, Pearson Education Limited, 2nd ed., ISBN: 978-0273-655114, Glasgow
- Johnson, J.L. (1999), Strategic Integration in Industrial Distribution Channels; Managing the Interfirm Relationship as a Strategic Asset, *Journal of the Academy of Marketing Science*, vol. 27, no. 1, pp. 4-18

- Knezevic, B. (2003), Globalization and Croatian Retail Industry, *Proceedings of 5th International Conference on Enterprise in Transition, University of Split, Split-Tucepi, May 22-24, 2003; Faculty of Economics nad Business Split*, pp. 226-237
- Kotler, P. & Kevin Lane, L. (2006), *Marketing Management*, Pearson Education, Inc., ISBN 978-0131457577, Upper Saddle River, New Jersey.
- Ireland, R. & Bruce, R. (2000) CPFR: only the beginning of collaboration, *Supply Chain Management Review*, September/October, pp 80-88.
- Lapide, L., Derome, J. & Radjou, N. (2002) Analysts' panel discussion, *Supply Chain World North America : Extending Collaboration to End-to-End Synchronization*, April 2002, in: Ayers, J.B. (2006), *Handbook of Supply Chain Management*, 2nd ed. Taylor & Francis Group, ISBN: 978-0849331602, Boca Raton, USA. pp 96.
- McCarthy, S. & Golobic, S. (2002) Implementing collaborative planning to improve supply chain performance, *International Journal of Physical Distribution & Logistics Management*, vol. 32, no. 6, pp 431-454.
- Mangan, J., Lalwani, C. & Butcher, T. (2008) *Global Logistics and Supply Chain Management*, John Wiley & Sons, Ltd, ISBN: 978-0-470-06634-8, Chichester, West Sussex, Great Britain.
- Mehrjerdi, Y.Z. (2009) The collaborative supply chain, *Assembly Automation*, vol. 29, no. 2, pp. 127-136.
- Mentzer, J.T., Foggin, J. & Golobic, S. (2000), Collaboration: The Enablers, Impediments, and Benefits, *Supply Chain Management Review*, September/October, pp. 52-58.
- Mentzer, J.T. , Min, S. & Zacharia, Z.G. (2000) The Nature of Interfirm Partnering in Supply Chain Management, *Journal of Retailing*, vol. 76, no. 4, pp. 549-568.
- Moorman, C., Zaltman, G. & Deshpandé, R. (1992) Relationships Between Providers and Users of Market Research: The Dynamics of Trust Within and Between Organizations, *Journal of Marketing Research*, vol. 29 (August), pp. 314-329.
- Morgan, R.M. & Hunt, S.D. (1994), The Commitment-Trust Theory of Relationship Marketing, *Journal of Marketing*, vol. 58 (July), pp. 20-38
- Pooler, V.H., Pooler, D.J. & Farney, S.D. (2004), *Global Purchasing and Supply Management: Fulfill the Vision*, 2nd ed., Kluwer Academic Publishers, ISBN: 1-4020-7816-1, USA
- RCCBS First Release, no. 4.1. 2/3, Republic of Croatia Central Bureau of Statistics, 23rd September 2009
- Reese, J. (2004) Optimal Maintenance in the Supply Chain, in: Dyckhoff et al., (2004), pp. 371-385.
- Renko, S. (2008), How to Process of Internationalization enhances the Sustainability of the Croatian Retailing, *World Journal of Retail Business Management*, Vol. 2. Issue 4, pp.3-10, ISSN: 1994-2915
- Sabath, R. & Fontanella, J. (2002) The unfulfilled promise of supply chain collaboration, *Supply Chain Management Review*, July/ August, pp 24-29.
- Seifert, D. (2003), *Collaborative Planning, Forecasting and Replenishment: How to create a Supply Chain Advantage*, AMACOM, ISBN: 978-0814471821, New York.
- Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2004), *Managing the Supply Chain: The Definitive Guide for Business Professional*, McGraw-Hill, New York.

- Spekman, R., Kamauff, J. & Myhr, N. (1998) An empirical investigation into supply chain management: a perspective on partnerships, *Supply Chain Management*, 3 (2), pp 53-67.
- Varley, R. (2003), *Retail Production Management: buying and merchandising*, Routledge, Taylor & Francis Group, ISBN-10: 9780415327152; ISBN-13: 978-0415327152, London
- Waters, D. (2003), *Logistics: An Introduction to Supply Chain Management*, Palgrave Macmillan Ltd, ISBN: 0-333-96369-5, Great Britain.



Supply Chain Management - New Perspectives

Edited by Prof. Sanda Renko

ISBN 978-953-307-633-1

Hard cover, 770 pages

Publisher InTech

Published online 29, August, 2011

Published in print edition August, 2011

Over the past few decades the rapid spread of information and knowledge, the increasing expectations of customers and stakeholders, intensified competition, and searching for superior performance and low costs at the same time have made supply chain a critical management area. Since supply chain is the network of organizations that are involved in moving materials, documents and information through on their journey from initial suppliers to final customers, it encompasses a number of key flows: physical flow of materials, flows of information, and tangible and intangible resources which enable supply chain members to operate effectively. This book gives an up-to-date view of supply chain, emphasizing current trends and developments in the area of supply chain management.

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Sanda Renko (2011). Vertical Collaboration in the Supply Chain, Supply Chain Management - New Perspectives, Prof. Sanda Renko (Ed.), ISBN: 978-953-307-633-1, InTech, Available from: <http://www.intechopen.com/books/supply-chain-management-new-perspectives/vertical-collaboration-in-the-supply-chain>

INTECH
open science | open minds

InTech Europe

University Campus STeP Ri
Slavka Krautzeka 83/A
51000 Rijeka, Croatia
Phone: +385 (51) 770 447
Fax: +385 (51) 686 166
www.intechopen.com

InTech China

Unit 405, Office Block, Hotel Equatorial Shanghai
No.65, Yan An Road (West), Shanghai, 200040, China
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

© 2011 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike-3.0 License](https://creativecommons.org/licenses/by-nc-sa/3.0/), which permits use, distribution and reproduction for non-commercial purposes, provided the original is properly cited and derivative works building on this content are distributed under the same license.

IntechOpen

IntechOpen