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Supply Chain Collaboration under Uncertainty in the Albanian Beer Market

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Abstract. *Today supply chain uncertainty is higher due to the global crisis, the fast changing technology and the increasing vulnerability of supply chains. Companies use different strategies to reduce uncertainty, like building agile supply chains, increasing resilience, postponement, etc. All these strategies require strong supply chain collaboration. Although research interest in supply chain collaboration is growing, no research has been done in Albania. This paper is one of the first to investigate supply chain management practices and the extent of supply chain collaboration in the Albanian beer industry. The aim of this research is twofold: first, to investigate how supply chain uncertainty influences the extent of collaboration with the supply chain members, and second, to analyze how organizational culture facilitates the collaboration process. Semi-structured interviews were conducted with the managers of the main beer companies. A guide questionnaire was prepared. It consisted of open and rate-scale questions about supply chain collaboration, supply chain uncertainty, supply chain management practices and organizational culture. The research will show that a high level of supply chain uncertainty does not always lead to a high degree of collaboration with the supply chain members. Organizational culture is the key driver of a successful collaboration. Not all types of culture can facilitate collaboration but only the ones with an external orientation.*

Keywords: *supply chain management, supply chain collaboration, supply chain uncertainty, organizational culture, Albanian beer producers.*

Introduction

We are living in an uncertain world. Customers require more choices, better prices, high quality and better post sale services; technology is changing quickly; suppliers are becoming less reliable. If you cannot satisfy customers, be at the leading edge of technology and if suppliers are not reliable, you may lose competitive advantage.

Uncertainty from demand, technology and suppliers are the main sources of supply chain uncertainty (Chen & Paulraj, 2003). Today supply chain uncertainty is higher, firstly because supply chains are more vulnerable. They have been always vulnerable, but today supply chain vulnerability is higher as customer dependence is high (Wagner & Bode, 2006; Wagner & Neshat, 2010; Waters, 2011), supplier dependence is increasing (Hallikas,

Puumalainen, Vesterinen & Virolainen, 2005; Tang, 2006; Wagner & Neshat, 2010) and companies rely more on global sourcing (Wagner & Bode, 2006; Tang & Musa, 2011; Pereira, Christopher & Da Silva, 2014).

Secondly, as mentioned in the first paragraph, the current technology trends are increasing the supply chain uncertainty. Technology changes quickly, and companies need to be innovative, to introduce new products in the market. As they are introduced frequently, companies need to keep small inventory because many of the components will not be needed to produce the new products. To reduce inventory, they rely on global sourcing (Pereira et al., 2014), on different lead time reducing strategies (Glock, 2012) and on just in time inventory management (Monden, 2011).

Lastly, the global crisis of 2008 multiplied the sources of supply chain uncertainty. We can mention sources like unstable trade and capital flow, currency exchage risk, uncertainty about the environment regulations and an increase of uncertainty regarding the decision of choosing suppliers as companies in developed countries are becoming more credible (Malik & Ruwadi, 2011).

Reducing supply chain uncertainty is of strategic importance for companies. Strategies used by companies to reduce uncertainty vary from building flexible, aligned and agile supply chain (Lee, 2004); postponement, flexible supply base (Tang, 2006); increasing resilience of supply chains (Sheffi, 2007); designing robust value-creating supply chains (Klibi, Martel & Guitouni, 2010), etc. All these strategies require strong collaboration with the supply chain members. Many companies attribute their success to the relationships with their suppliers and buyers (Myers, 2010).

Research aim and hypothesis

The aim of this research is twofold: first to investigate how supply chain uncertainty influence the extent of collaboration with the supply chain members and second to analyze how organizational culture facilitates the collaboration process. The research is focused on the Albanian beer producers.

There are four main reasons why I chose the Albanian beer producers for this research.

Firstly, the consumption of domestic beer is increasing in Albania, due to the increase in quality and variety with reasonable prices (Chan-Halbrendt &

Fantle-Lepczyk, 2013). Secondly, the supply chain of the beer producers is a global one and so they can benefit more from engagement in supply chain collaboration. Thirdly, although interest in supply chain management is growing, no research has been done in the Albanian beer industry. Lastly, the beer industry is an interesting industry as there are five big beer producers in a small country like Albania and they are surviving in a saturated market.

Chen and Paulraj (2003) argue that the main sources of uncertainty are supply uncertainty, demand uncertainty and technology uncertainty. Supply and demand uncertainty depends on demand forecast and supplier reliability (Mc Laren, Head & Yuan, 2005). By collaborating with suppliers and customers more accurate demand forecast can be done, and long-term relationships can be built based on trust, respect and commitment. Also collaboration can reduce technology uncertainty, as by sharing information in real time with the chain members, you can catch up with the last technological trends quickly (Boon & Wong, 2011).

These observations suggest the following hypothesis:

Hypothesis 1: As supply chain uncertainty increases, collaboration with the supply chain members also increases.

Collaboration requires sharing information, joint decision making, commitment, trust, and respect (Laskowska-Rutkowska, 2009). In other words, collaboration requires focusing on building and managing relationships with the others. This approach is easier for cultures with external orientations. Cameron and Quinn (2011) define cultures with external orientations as the ones focused on interacting with others outside their boundaries. This discussion suggests the following hypothesis.

Hypothesis 2: Organizational cultures with an external orientation facilitate the process of collaboration.

The outline of the paper is the following: after the introduction section, there is a brief description of the Albanian beer industry, continuing with the relevant literature regarding supply chain collaboration, supply chain uncertainty, organizational culture and the relation of the last two with supply chain collaboration. Then, the methodology is explained. After the methodology section the findings are discussed, and I conclude with the limits of the study and recommendations for managers and future research.

Albanian beer industry

In Albania, beer was first produced in 1928 with the establishment of the Korca Beer by the investor Umberto Umberti (Italy) and Selim Mborja from Korca. There was a production capacity of 20,000 hl beer/year (1 hectoliter = 100 liters). In 1960, Birra Tirana was founded, with a capacity of 50,000 hl beer/year. After 1991 other beer producers, Stela, Norga, Kaon and 80 mini-brewery entered the market (Kume, 2011).

Albanian beer market is growing even after the crisis. This increase is shown by the improvement of the quality of Albanian beer, increased consumption of domestic beer compared with imported beer due to differences in price, increased variety of beer and huge innovations in technology (Chan-Halbrendt & Fantle-Lepczyk, 2013).

The main players in the Albanian beer market are large and medium-sized manufacturers, small producers that compete on low price and imported beers.

The large and medium-sized manufacturers are dominated by five Albanian companies, Tirana beer, Stela beer, Korca beer, Kaon beer and Norga beer. Tirana beer is a joint stock company with a long experience and tradition in the Albanian market. It is the company that holds the highest market share, thanks to its long presence in the Albanian market (since the 1960s). Korca Beer is a brand well known by customers because of its special taste. Stela beer is the second largest producer after Tirana Beer. Kaon and Norga beers are two new brands that have entered the Albanian market after 90s, and were able to capture a part of the beer market (Kume, 2011).

Competition from imports comes mainly from Greece and Italy. Greece dominates with 39%, followed by Italy with 33%, Romania with 6 percent. For producers of beer, competition with the world's beer giants from Germany, Netherlands, etc., is not easy. They have the technology, experience and economies of scale. However it is worth mentioning some disadvantages of imported beer suppliers such as transportation costs, poor distribution networks as well as the inability to control product freshness. Although in the recent years import beers are losing market share, yet they control about 45 percent of the market share. Among imported beers we can mention Amstel, Peroni, Dreher, Heineken, Tuborg, Skopsko, Corona, Budwiser, Nastro Azzuro, etc. (Kume, 2011).

Exports of Albanian beer could be improved. Local manufacturing companies are making modest efforts to export mainly in Kosovo, Greece, Italy and

Macedonia. Beer industry is making efforts to differentiate its products (light beer, non-alcoholic beer, ice beer, etc.). Yet one observes a low product differentiation (Kume, 2011).

Literature review

Supply chain collaboration

Supply chain collaboration has become one of the most important topics in the business area not only because of its importance in supply chain management, but because it provides many benefits to the chain members as well. These benefits are more than just improved efficiency and effectiveness, including increased customer satisfaction (Myers, 2010), improved profit and market share (Myers & Cheung, 2010), reduced lead time and improvement in innovation (Fawcett, Fawcett, Watson & Magnan, 2012).

The definition that will be used in this paper is the one provided by Fawcett et al. (2012): supply chain collaboration is a vital dynamic capability based on trust, respect and commitment that can provide better performance to the supply chain members.

Collaboration is easy when you have the right partners, so an important aspect of collaboration is the selection of supply chain members. According to Barrat (2004) supply chain collaboration means sharing joint objectives, intellectual agility, trust, respect and commitment, in order to get the best outcome for each member. The last three factors are the ones that companies value most when they select their partners. A prime selection is done based on their reputation, quality issues, financial performance and past experience with the company. Normally selection criteria will vary for each industry and company, but criteria like economic benefits, the existence of synergy, commitment are some of the most important criteria for selecting the supply chain partners (Duffy, 2014).

After the selection of the appropriate partners, companies must decide the elements of collaboration. Many consider supply chain collaboration as a unilateral process that focuses on one element like information sharing, co-managed inventory, process coordination and workflow realignment (Lee, 2000). Simatupang and Sridharan (2005) argue that key elements of collaboration interact with each other. According to them the key elements of collaboration include information sharing, decison synchronization and incentive alignment. Information sharing refers to the access to the personal data of the supply chain members. Decision synchronization is defined as the

extent to which the supply chain members coordinate critical decision at planning and decision level. Incentive alignment refers to the sharing of costs, benefits and risks with the supply chain members. Based on these three elements of collaboration the authors developed a collaboration index that will be used in this research to measure the extent of supply chain collaboration.

Supply chain uncertainty

Supply chains are more uncertain now than few years ago. Today supply chain uncertainity is high due to the global crisis, the new technology trends and the increasing vulnerability of supply chains (discussed in the introduction section).

Simangusong and Hendry (2011) argue that the main sources of uncertainty can be divided into three groups: uncertainty that come from the focal company (internal organizational uncertainty), internal supply chain uncertainty that comes from the relations with the supply chain members and external uncertainties that come from factors outside the supply chain.

This paper is focused on the internal supply chain uncertainty. Chen and Paulraj (2003) argue that internal supply chain uncertainty can be attributed to three sources: supplier uncertainty; demand uncertainty and technology uncertainty. Supply uncertainty relates with indicators of quality, timeliness and the inspection of supplier requirements. Demand uncertainty refers to fluctuations and variation in demands. While technology uncertainty relates with the technological changes within the industry.

A recent report concluded that uncertainty is affecting supply chain in four ways: by adding costs, increasing inventory levels, increasing lead times and reducing speed to markets (Butcher, 2014). The impact of these negative effects is sometimes felt in the long term, so reducing supply chain uncertainty is of strategic importance for companies. Strategies used by companies to reduce uncertainty vary from building flexible, aligned and agile supply chain (Lee, 2004), postponement, flexible supply base (Tang, 2006), increasing resilience of supply chains (Sheffi, 2007), designing robust value-creating supply chains (Klibi, Martel & Guitouni, 2010), etc. All these strategies require strong collaboration with the supply chain members. Many companies acknowledge their success to the relationships with their suppliers and buyers (Myers, 2010).

Supply chain collaboration initiatives help to coordinate customer demand with supplier and manufacturer production plan, by reducing demand and

supply uncertainty (Mc Laren, Head & Yuan, 2005). Supply chain collaboration also can reduce technology uncertainty, as the continual sharing of information makes more visible the recent trends in technology (Boon & Wong, 2011). The literature review suggests that collaboration with the supply chain members can reduce uncertainty deriving from supply, demand and technology.

Organizational culture

Hofstede, Minkov and Hofstede (2010, p.17) define organizational culture as the "*collective programming of the mind, which makes members of one group or category of people different from those of another*"

Cameron and Quinn (2011) developed a competing value framework to study organizational culture. This framework focuses on two main dimensions: the first dimension differentiates criteria based on flexibility and dynamism versus the other criteria based on stability, order and control. The second dimension differentiates criteria based on internal orientation versus criteria based on external orientation. These two dimensions are the main issues in supply chain management, so this framework is the most appropriate for examining the relationship between the organization culture and supply chain collaboration.

From the combination of the two dimensions, four types of organizational culture arise: hierarchy culture, market culture, clan culture and adhocracy culture. The characteristics of each type of culture are presented in table 1.

Table 1. The competitive value framework (Source: adapted from Cameron and Quinn (2011))

Dimensions	Internal orientation	External orientation
Flexibility	*Clan culture* Shared values and goals Cohesion Collaboration Teamwork Main objectives are long term benefits and individual development Ideal for uncertain environment	*Adhocracy culture* Flexible Risk taking Adaptable to new opportunities Innovative Appropriate for hyper turbulent environment Main objective is being at the leading edge of new product, services and knowledge.
Stability	*Hierarchy culture* Clear lines of decision-making Multiple hierarchical levels Formalized procedures and rules Conservatism Main objectives are stability, effectiveness and efficiency	*Market culture* Oriented toward the external environment High competitiveness Main objectives are profitability, secure customer base and strategic positioning

Supply chain management requires collaboration, which in turns requires membership, trust, commitment and sharing information (Laskowska-Rutkowska, 2009). Perhaps a culture with an external orientation will be the best, but there is little evidence in literature about the best type of culture that makes easier the supply chain collaboration process in organization.

Methodology

From the main five Albanian beer producers, only four become part of the study, as the managers of one company did not agree to give information about the topics of the research.

Semi-structured interviews were conducted with the managers of each company. The persons interviewed were purchasing managers, sale managers and – in one case – the owner of the business. In some companies only one person was interviewed, while in another company two persons were interviewed.

All interviews were conducted face to face, and the confidentiality of data was promised. A guide questionnaire was prepared to support the semi-structured interviews. It has four main parts: supply chain management practices; supply chain collaboration; supply chain uncertainty and organizational culture.

The first part consisted of open questions and one rate scale questions. The open questions were about the supply chain management practices adopted by the companies in terms of collaboration with suppliers, collaboration with customers and information sharing. The rate scale question was about the reasons for selecting the supply chain members. A list of reasons was presented, and they were asked to give an evaluation from 1 to 5, where 1 = strongly disagree and 5 = strongly agree. The interviewers were free to mention other reasons that were not in the questionnaire.

For the second part the collaboration index of Simantupang and Sridhran (2005) was used. The authors measure collaboration based on three dimensions: information sharing, decision synchronization and incentive alignments. In Appendix 1 are listed the items for each dimension. The respondents were asked to give an evaluation from 1 to 5, where 1 = strongly disagree and 5 = strongly agree, to each item. The index score simply equals the sum of the aggregate scores of each dimension, assuming equal weight for each of them. The higher the index scores the higher the collaboration

between the supply chains members is. Comparing the score of the collaboration index with the maximum score, I could evaluate if the level of collaboration is low, medium or high. The maximum score of the collaboration index relates with the maximum score for each dimension (the respondents evaluate five for each item).

To measure supply chain uncertainty, the study of Chen and Paulraj (2004) was used. As mentioned in the literature review, they identified three sources of uncertainty: supply, demand and technology uncertainty. The authors for each type of uncertainty provide a list of items that are presented in Appendix 2. The respondents were asked to give an evaluation from 1 to 5, where 1 = strongly disagree and 5 = strongly agree, to each item. Regarding supply uncertainty, a total score of 10 indicates that the suppliers fulfill all the requests and offer materials of consistent quality, so the supply uncertainty is low. An evaluation of 25 for the second dimension (in the case when the respondent evaluates with the maximum number of points all the five items) is related to high demand uncertainty. Lastly, high technology uncertainty relates to a total evaluation of 20 (in the case when the respondents evaluate all the four items with the maximum number of points). The scores for each source of uncertainty were compared with the maximum scores, to evaluate the level of uncertainty for the three sources of uncertainty. The last part was focused on organizational culture, and consisted of open questions.

The guide questionnaire was first evaluated by academicians, and was tested in one of the company's part of the study. Some questions were improved and changed based on the feedback of the academicians and the result of the first interview. The most relevant ethical issues for this research are confidentiality of data, avoiding causing harm and disrespect, informed consent and promise to provide the participant with a copy of the study.

Research findings

The name of the beer producer will not be mentioned as they asked to remain anonymous, so I will call them Beer producer A, B, C and D.

The selection of supply chain members

Table 2 summarizes the findings of what participants consider important when selecting a supply chain member.

Table 2. Supply chain member's selection

	What are the main reasons for selecting the supply chain members?	
	The most important	**The least important**
Beer producer A	Is reliable Had been reliable with us in the past Is committed to us Offers economic benefits Helps to reduce the production costs Helps to reduce the workforce cost	Offers political advantages Offers environmental advantages
Beer producer B	Is reliable Has a high degree of integrity Has a good reputation Had been reliable with us in the past Offers economic benefits Improves our competitive position Helps to reduce the production costs	Offers political advantages Offers tax advantages Offers environmental advantages
Beer producer C	Is reliable Offers economic benefits Offers tax advantages Offers environmental advantages Helps to reduce the production costs	Offers political advantages Has a high degree of integrity
Beer producer D	Is reliable Has a high degree of integrity There is synergy between us Offers environmental advantages Helps to improve the competitive position	Offers tax advantages Offers political advantages Offers economic benefits

All the beer producers seek members that are reliable and help to reduce the production costs. They do not consider tax and political advantages as important criteria. Beer producer D as opposed to the others does not select the supply chain members based upon the economic advantages they offered.

Supply chain practices

The suppliers of many beer producers are unique and strategic; sometimes they have the same supplier, which is consistent with the findings from the previous part (the most important selection criteria for supply chain members is reliability). Having strategic suppliers requires building strong relationships with them, which in turns requires collaboration. But the beer producers are engaged very little in supply chain management. There is little collaboration, synergy and information sharing between the supply chain members. Sophisticated supply chain processes like EDI and flexible manufacturing cells are not used. Even other sophisticated tracking mechanisms are not used, and many of them do not know about these mechanisms.

They do not have software to exchange information in real time with suppliers and customers due to the high cost of implementing the software.

Moreover, suppliers and special customers are not accustomed to using software and to inform the supply chain members about/on inventory level, price, etc., considered personal and strategic data.

Supply chain collaboration

Table 3 reports the score for the collaboration index, expressed as the sum of the score of the three dimensions of the index, for each beer producer.

Table 3. Collaboration index

Beer producer	Information sharing	Decision synchronization	Incentive alignment	Collaboration index
Beer producer A	15	17	17	49
Beer producer B	38	35	14	87
Beer producer C	30	26	14	70
Beer producer D	25	17	11	53
Maximum score	*50*	*40*	*25*	*115*

The collaboration is at medium levels for the Beer producers B and C, and at low levels for Beer Producer A and D. It makes no sense to interpret these results alone, as the research aims to find the correlation that exists between supply chain collaboration and supply chain uncertainty. So I will analyze the finding for supply chain uncertainty and then I will relate them with the present findings.

Supply chain uncertainty

The sum of the evaluations given from the respondents for each type of uncertainty is presented in table 4.

Table 4. Supply chain uncertainty

Beer producers	Supply uncertainty	Demand uncertainty	Technology uncertainty
Beer producer A	7	19	13
Beer producer B	8	16	12
Beer producer C	9	11	8
Beer producer D	10	6	10
Maximum score	10[1]	25	20

The data in table 4 show that supply chain uncertainty is low for all the beer producers. The demand uncertainty is high for the first beer producer, at medium levels for the other two beer producers and low for the fourth beer producer. Lastly, technology uncertainty is at medium-low levels. The overall

[1] An evaluation of 10 means low supply uncertainty

supply chain uncertainty is at high-medium levels for the first three producers and at low levels for the last producer.

Beer Producer A has the highest level of supply chain uncertainty in comparison with the other beer producers, while it has the lowest score of the collaboration index. Beer producer C and D have a low level of supply chain uncertainty and low-medium score of the collaboration index, while Beer producer B has the highest score of the collaboration index and supply chain uncertainty at medium levels. The literature and hypothesis 1 argue that when supply chain uncertainty is high more supply chain collaboration is required. The research shows that this is not true in the case of Beer Producer A. Let's analyze the findings related with organizational culture and then analyze more thoroughly these contradicting results.

Organizational culture

The framework used to analyze the organizational culture is the competitive value framework of Cameron and Quinn (2011). After carefully analyzing the elements of the organizational culture for each producer, I concluded that Beer Producer A has a clan culture, Beer Producer B a market culture while the others have a hierarchical culture. The most important elements of the organizational culture for each beer producer are summarized in Appendix 3.

Beer Producer B has a culture with an external orientation and has a high score of the collaboration index while the other producers have organizational cultures with internal orientation and low-medium score of the collaboration index. The finding does not contradict hypothesis 2.

Beer producer A, with clan culture, has a high level of supply chain uncertainty but a low level of supply chain collaboration. The lowest level of collaboration concerned the information sharing and decision synchronization. During the interview the manager of Beer Producer A mentioned that for them privacy is important, so suppliers and customers do not need to have access to their personal information or participate in their decision making processes. Their organizational structure is flat, and I noticed that they used to work in group. It would be better if they adopted this spirit of collaboration with the external members of the supply chain as well, in order to reduce the high demand uncertainty that they are facing.

Conclusions

Albanian beer producers are aware of the many benefits of supply chain management, but the cost of implementing the supply chain practices are not justifiable especially due to lack of customer education in this field.

The new business environment is facing more supply chain uncertainty that can be attributed to three sources: supply uncertainty, demand uncertainty and technology uncertainty (Chen & Paulraj, 2003). The main source of uncertainty for the Albanian beer producer derives from demand while uncertainty from supply side is very low. Their suppliers always fulfill their requests and offer materials of consistent quality. The technology uncertainty is low, as we are not dealing with a high-tech product. That is why supply uncertainty is low while demand uncertainty is high. Based on the findings of this research I can argue that the suppliers of the Albanian beer producers are international suppliers, with a long experience and the beer producers always keep inventory of the main materials. These reasons explain why supply uncertainty is low.

Keeping inventory is costly, and the Albanian beer producers are aware of this. In the past it was important to reduce the cost of production, so the producers always seek low cost suppliers. Now they are trying to find suppliers that are reliable and committed.

The main reasons why demand uncertainty is high are:
In general demand uncertainty for beer is high as it is an indiscrete product, which is produced by process industry.
The Albanian customers are not accustomed to using software for exchanging information with the producers, making the demand forecast difficult.

In general the level of collaboration in the Albanian beer industry is at medium levels, with an average score of the collaboration index of 65. Albanian beer producers do not like to share information with the supply chain members, but instead they argue that decision synchronization and sharing of costs and benefits with the supply chain members would benefit everyone in the supply chain.

This research shows that there are cases when a high level of supply chain uncertainty does not lead to a high degree of collaboration with the supply chain members. Organizational culture is the key driver of a successful collaboration. The findings of the present study show that not all types of culture can facilitate collaboration, but only the ones with an external

orientation. As cultures with internal orientations are the most common among the Albanian beer producers, the implementation of supply chain collaboration practices will not be easy. The next section provides some recommendations to help managers to deal with supply chain collaboration, taking into consideration their organization culture and level of supply chain uncertainty.

Recommendations for managers

Based on the finding of the research my suggestions for the managers are the following:

Multiple sourcing versus single sourcing: We are living in an uncertain world, and it is better to have more than one supplier. Many companies keep one supplier to meet their normal demand of components and another supplier in case of a sudden increase in demand for components. Some companies rely on many suppliers, as they want to secure the flow of components. If something happens to one supplier, the other supplier is available. But having many suppliers means "destroying money and relationships". Destroying money as you have to invest money to find and keep many suppliers. If you rely on many suppliers, you cannot build strong relationships with each of them. Before deciding to rely on one or more suppliers, analyze the competition to see if any of your competitors rely on the same supplier. If you share the same supplier with your competitors, it is necessary to create strong relationships with your supplier and to analyze the supplier market in case of any inconvenience for the supplier.

Collaboration to detect the weakest link in the supply chain: Today many supply chains are global and complex, so it is difficult to monitor and manage them. If one part of the supply chain is weak, all the supply chain will be weak. The best suggestion for quickly discovering the weakest link is collaboration and continual information sharing with all the companies in the supply chain. By collaborating with all the members in the supply chain, you can help them to meet your objectives and also you will know them better. Companies need to collaborate in normal times and especially in difficult times. If you exchange real-time information about demand and supply with your members in the supply chain, you will notice immediately if something happens to them and vice versa. A small problem can create big problems, so it is better to discover and solve it immediately.

Understand your organizational culture: Companies have different cultures that sometimes help them to engage easily in supply chain collaboration and sometimes impose limits. So it is suggested to understand what the strengths

and limitations of your corporate culture are. When you decide to engage in supply chain collaboration, you have to consider these strengths and limitations.

Organize internally and then externally: The spirit of collaboration must exist first inside the company and then outside the company. If people in the company are not used to collaborating and working together as a team, it will be a waste of time trying to collaborate with other companies.

Limitations and recommendations for future research

The results of this study are relevant for the Albanian beer producer. Further studies should expand the study in other industries. Another limitation of the study is the focus on the focal company. Future research may focus on different companies in the supply chain, for example, the best case will be to conduct a study on the aggregate supply chain.

The Albanian beer producer relies on one supplier for many products and they do not build strong and lasting relationship with them. Based on this finding, one interesting area for future research will be the problem of single sourcing versus multiple sourcing. The research will be useful in helping managers to understand if single sourcing or multiple-sourcing is the best option for their company.

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Appendix 1. Collaboration index

Information sharing

Our business unit consistently shares the following information with our suppliers:

1. Promotional events
2. Demand forecast
3. Points of sale (POS) data
4. Price changes
5. Inventory holding costs
6. On-hand inventory levels
7. Inventory Policy
8. Supply disruptions
9. Order status or order tracking
10. Delivery schedules

Decision synchronization
Our business unit consistently incorporates our suppliers input to:
1. Jointly plan on product assortment
2. Jointly plan on promotional events
3. Jointly develop demand forecasts
4. Jointly resolve forecast exceptions
5. Consult on pricing policy
6. Jointly decide on inventory requirements
7. Jointly decide on optimal order quantity
8. Jointly resolve order exceptions

Incentive alignment
Our business unit consistently:
1. Shared saving on reduced inventory costs
2. Delivery guarantee for a peak demand
3. Allowance for product defects
4. Subsidies for retail price markdowns
5. Agreements on order changes

Appendix 2. Supply chain uncertainty measurement model

Supply uncertainty
1. The suppliers consistently meet our requirements
2. The suppliers produce materials of consistent quality.

Demand uncertainty
1. Our master production schedule has a high percentage of variation in demand.
2. Our demand fluctuates drastically from week to week.
3. Our supply requirements vary drastically from week to week.
4. We keep weeks of inventory of the critical material to meet the changing demand.
5. The volume and/or composition of demand are difficult to predict.

Technology uncertainty
1. Our industry is characterized by rapidly changing technology.
2. If we do not keep up with changes in technology, it will be difficult for us to remain competitive.
3. The rate of process obsolescence is high in our industry.
4. The production technology changes frequently and sufficiently.

Appendix 3. Elements of the organizational culture

Beer producers	Elements of the culture	Type of culture
Beer producer A	Risk takers Teamwork Collaboration Low level of hierarchy	Clan culture
Beer producer B	High level of hierarchy Very competitive Oriented toward profits and strategic positioning	Market culture
Beer producer C	High level of hierarchy Individualism Formalized rules and procedures High level of indulgence	Hierarchical culture
Beer producer D	High level of hierarchy High level of indulgence Formalized rules and procedures Individualism	Hierarchical culture