IMPACT OF COMPETITIVE STRATEGIES AND SUPPLY CHAIN STRATEGIES ON THE FIRM PERFORMANCE UNDER ENVIRONMENTAL UNCERTAINTIES

BORSA ISTANBUL CASE IN THE MANUFACTURING SECTOR

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Abstract

This paper attempts to determine the impact of the supply chain strategies and the competitive strategies on the firm performance and if this changes according to the conditions of uncertainty. The scale that was developed to collect data from the manufacturing companies listed in Borsa Istanbul in Turkey was utilized. After the pilot test, questionnaires were applied to 174 companies listed in Borsa Istanbul via e-mail and telephone, whereas 90 companies responded. Factor analysis and reliability analyses were used for data analysis and the problematic questions were excluded from the scale. The accuracy of the model was tested by the structural equation model in AMOS 20.0 software that was developed for the analysis of the main hypothesis. It was found that the competitive strategies influenced the supply chain strategies positively and significantly; cost leadership strategy and lean supply chain strategy had a significant impact on the firm performance under the conditions of high uncertainty; whereas, differentiation strategy and agile supply chain strategy had a significant impact on the firm performance under the low uncertainty. In conclusion, the companies are supposed to use environmental uncertainty as a determinant of the perceptions in setting their strategies.

Keywords: Competitive Strategies, Supply Chain Strategies, Environmental Uncertainty, Financial Performance, Structural Equation Model, AMOS, Borsa Istanbul

INTRODUCTION

Today (in 2000s), changing customer expectations and increased knowledge level; customer-oriented approach of the companies (Kotler, 2000); changing customer expectations from the products (Ross, 2000); development of new management models (Chandra and Kumar, 2000: 6); advances in information and communication technologies (Gunesekaran and Ngai, 2004: 272; Kouvelis and Su, 2007: 5); changing structures and functions of companies due to globalization (Thoumrungroje, 2004: 4; Cook, 2011: 1-2); tendency of local companies towards standardization (Levitt, 1983: 93); global production, increased stocks and resource utilization (Rushton et al., 2010: 23) and thus more competitive positions of companies (Bovet and Sheffi, 1998: 17) have led them to use new management philosophies. Furthermore, those companies that are not well prepared for global competition are stumped (Spulber, 2007: 2). As main goals of companies are to adapt to the changing and developing environmental conditions and to be competitive, a lot of management and production philosophies have been developed. One of these philosophies is supply chain management (Shavazi et al. 2009: 93).

Comprised of a set of activities starting from the supply of raw materials, production, assembly, storage, order management and distribution to the delivery of products to the customer as well as the information systems that are required to follow-up these activities (Lummus and Vokurka, 1999: 11), supply chain was defined as the management of the process spanning from "the supplier's supplier to the customer's customer" (SCM council) and also the flow of funds and information (Metz, 1998). Tan et al. (1998) proposed one of the broadest definitions by also adding other aspects such as competitiveness and technology.

Seven important activities are recommended for a successful supply chain management: Integrated behavior, mutually sharing information, mutually sharing channel risks and rewards, cooperation, the same goal and the same focus of serving customer services, integration of processes and partners to build & maintain long-term relationships (Mentzer, 2001). The supply chain studies focused on strategic management, relationships-stakeholders, logistics, best practices, Marketing and organizational behaviors (Croom, Romano, and Giannakis, 2000).

Supply chain management was used to define storage and transportation by 1960s (Bowersox, 1969: 72), total cost management by 1980s, integrated logistic management by 1990s, supply chain management by 2000s and e-supply chain management practices after 2000s (Ross, 2011).

Supply Chain Strategies

Wang et al. (2004) classified supply chain under three groups: Lean Supply Chain (LSC), Agile Supply Chain (ASC) and Hybrid Supply Chain (HSC) (Wang et al, 2004: 2). There are 6 groups

in total when Reverse Supply Chain (RSC), Green Supply Chain (GSC) and Global Supply Chain (GSC) are also classified in addition to the abovementioned groups although they are not used as a strategy alone. Only two of these classifications that are Lean supply chain and Agile supply chain can be considered as supply chain strategies. The others can be regarded as policies that can be used in addition to these two strategies rather than a supply chain strategy alone.

Ross claimed that the strategies of supply chain management were based on three different approaches. The first approach is cost leadership. This approach covers principles and rules to increase the productivity of the chain and profitability by reducing the wastes in the chain. This is also known as *lean supply chain strategy*. The second approach is the operational performance. This approach is centered around the agility of the supply chain executive function against the variability of demands as much as possible. This method is also known as supply elasticity, adaptive supply chain management, delivery elasticity, demand-oriented supply network management or *agile supply chain management*. The last approach is the customer-centered approach. This approach aims to improve the supply chain capacity and resources on a continuous basis and increase the total value provided to the customers. This method is also known as close/relational supply chain management (Ross, 2008:112).

Lean production techniques also underlie the lean supply chain (Hanna and Newman, 2007: 632). Carrol claimed that lean production was based on the production techniques introduced by Henry Ford in 1913 (2002:6; 2008:11). Lean supply chain is broader than just-in-time production (JIT) or than what is already performed (Mentzer et al., 2006: 10). As lean supply is a suitable method for lean production and aims at eliminating manufacturing wastes, it is becoming more and more popular (Kimball, 2005: 1).

Agile manufacturing is a supply chain strategy that has been recently proposed to meet the product and service needs of the customers (Chopra and Meindl, 2007: 22) as an option focusing on their demands (Amir, 2011: 287) better than the competitors. Agility is a comprehensive commercial concept and derived from production elasticity (Baker, 2008: 39). Agility is related to the interface between the business and the market. Agile Supply Chain Management responds to the rapidly changing, constantly differentiating global markets in a dynamic, content-specific and aggressive way based on variability and growth. It offers customer-oriented product and service designs. Agility is beyond cost and quality and focuses on the customer satisfaction (Yusuf et al., 2004: 379). This strategy aims at responding rapidly to the sudden demand changes in the market and meeting the unpredicted demands (Wang et al, 2004: 2). Naylor et al. (1999: 108) took agility further and defined it as a response to the rapid changes in the market; market knowledge to use the opportunities and a virtual company.

On the other hand, Christopher (2000) described agile supply chain as a network of virtuality, market sensitivity, process integration and communication.

As supply performance directly influences both financial and operational process of businesses, selection of the suppliers of specific products and services is critical (Chen and Paulraj, 2004: 139, Kim, 2006: 59). Firm performance can be measured as financial and operational performance (Prahinski and Benton, 2004: 42-43). On the other hand, supplier performance can be measured by some variables such as Price, Quality, Delivery, Customer Satisfaction, Elasticity, After-Sales Services, Product Range, Product Support, Product Quality, Customer Service Efficiency, Pricing, Delivery Performance, Technical Competence, Service and Innovation (Wagner and Krause, 2007: 3162; Smith, 2008: 56; Güneri and Kuzu, 2009: 776-777; Jain et al, 2009: 3022; Akman and Alkan: 2006: 26). Harmony of the attitudes and perceptions between companies and suppliers also affect the supplier performance (Thakkar, Kanda and Deshmukh, 2008: 94). The most common selection and performance variables are *Cost, Quality, Delivery, Time/speed, Elasticity and Delivery reliability*.

Competitive Strategies

Competition between companies has increased due to the increased supply as a response to the increased demand all around the world and also because the increase in supply is greater than the increase in demand in certain sectors. Competition conditions have put a pressure on the companies as global companies are also involved in the competition. Competition can be defined as the efforts of multiple participants in similar positions to gain a scarce material or a desired position at the same time in a relatively fair environment by complying with the competition rules (Türkkan, 2001: 69). On the other hand, it can also be defined as "a struggle to survive" (Thatte, 2007: 42). Presence of associations, coalitions and agreements between the companies in a sector decreases competition further. However, competition will exist naturally and maybe increase further in the absence of abovementioned structures. There are certain pressure factors that force the companies. The model developed by Porter include five different factors of pressure (Porter, 2000: 5), which are presented as fallows figure 1.

Competitive strategy is comprised of three strategies developed by Porter in 1980. These are Overall Cost Leadership, differentiation and focus strategies (Porter, 1980). Overall cost leadership strategy requires efficient use of facilities and an aggressive structure. This strategy aims at reducing and controlling the costs of R&D, services, publicity and etc. without moving away from the customer expectations and compromising quality, service and other areas (Porter, 1980: 35 and Singer et al., 2007: 27).

The second overall strategy aims at making a unique difference in the product and service offered in the industry that can be perceived by all companies. Differentiation approach has many different forms. Worldwide companies can become superior to the average competitors by differentiating technology, innovation and distribution (Singer et al., 2007: 29). Differentiation may make it difficult for the companies to reach a high market share. Therefore, the high market share objective can be compromised in the application of this strategy (Porter, 1980: 37-38). Hooley et al. identified five strategies including product differentiation, price differentiation, distribution differentiation, promotion differentiation and brand differentiation (Hooley et al., 2008: 308). Panayides claimed that small companies could be more successful in implementing the differentiation strategy compared to the large companies (Porter, 2000 p.5.)

Figure 1: Five Factors Influencing Competition in a Sector (Power-Pressure Factors)
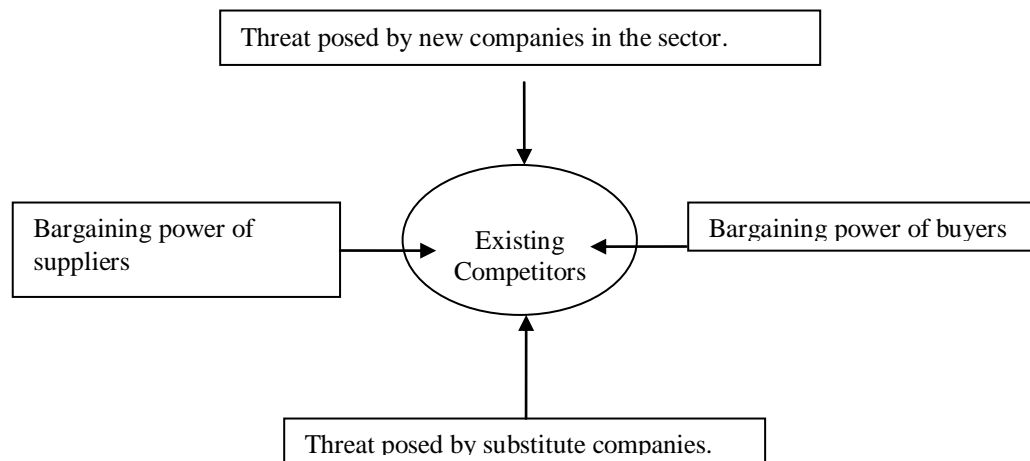
Source: Porter (1980)

The last strategy proposed by Porter is the focus strategy. This strategy aims at providing the products and services to a small segment of a market rather than the entire market. To this end, companies try to create a competitive advantage by implementing the cost leadership or differentiation strategy in a certain group of buyers, a product line segment or a certain geographical market. Cost leadership and differentiation strategies focus on the entire industry, while the focus strategy structures all activities and policies for a single target and efforts are put to achieve that target. Focus strategy can enable companies to generate revenue above the average (Porter, 1980: 38 and Singer et al., 2007: 29).

Figure 2: Competitive strategies Matrix

STRATEGIC ADVANTAGE

	Uncertainty Perceived by the Buyer	Low Cost Position
Entire industry	**DIFFERENTIATION**	**COST LEADERSHIP**
Only in a single segment	**FOCUS**	

STRATEGIC OBJECTIVE (vertical label, left of table)

Adapted from Porter, 1980: 39 and Singer et al, 2007: 29

Uncertainty

Uncertainty is an important phenomena in some fields such as organizational theory, marketing and strategic management. An overwhelming majority of the researchers studying organizations acknowledge the importance of uncertainty (Vechiato, 2012: 436; Lin, 2006: 439; Lee et al., 2009: 192; Chen and Paulraj, 2004: 122; Kocabaşoğlu et al., 2007: 1143; Pagel and Krause, 1999: 308; Habib et al., 2011: 256, Yoe, 2012: Hill, 2008, Rodrigues et al, 2008: Griffiths and Wall, 2008).

Although uncertainty and risk are usually considered to be similar, these concepts are different (Rodrigues et al., 2008: 390). Uncertainty refers to the fact that there might be many consequences of a certain choice and the likelihood of these consequences to occur is not known (Gamero et al, 2011: 428, Ariöz, 2012: 5). However, risk is the probability that an event will occur and the impact of that event. Risk can be predicted based on past experiences, whereas it is difficult to estimate uncertainties (Jones, 2004: 46). Risk has two forms as the combination of overall hazard and security (Darbra et al., 2008: 378). Risk is usually a concept used to describe negative conditions. Measures can be taken against risks. Negative impacts of a risk can be minimized by issuing an insurance or implementing risk management techniques.

The concepts of uncertainty and risk are usually compared. Risk usually ends up with negative consequences, while uncertainties are the external developments that may lead to positive or negative consequences. Risk can be described by the following equation: Risk = Probability * Consequence (Yoe, 2012: 1). On the other hand, it is hard to predict an uncertainty contrary to a risk (Hill, 2008: 49). A few statements can be made about risk: Risk is anywhere, Some risks are more serious than others, Zero risk is not an option, Risk is inevitable, etc.

Uncertainty may not always lead to negative consequences but also may enable positive results. There is a *surprise* in an uncertainty. In other words, it contains an unexpected, unpredicted or unanticipated aspect. For example, excessive decrease in the demand for a product of a company is negative, while an increase in the demand is positive. Both cases are uncertain, there isn't any clue to anticipate such uncertainty; therefore, companies may be unprepared. This highlights the importance of uncertainty (Reuben and Driebe, 2005: 7; Garratt, 2007: 12).

The social complexities and changes that are growing in the modern world also cause the uncertainty to grow and become steady. As the world is getting complicated, the roles and personalities of people in societies are also diversified and getting complicated. Although human beings survived with simple and uncomplicated personalities and roles such as hunting and gathering in 99% of human history, there are a lot of roles and personalities in today's societies. This increased especially the social complexity and thus uncertainty. Combined with complexity, risk and uncertainty become harder. For example, the complexity caused by the earthquake and tsunami that occurred in 2011 in Japan, which is one of the most ambitious countries in the world in coping with earthquakes, challenged the risk and uncertainty estimation and uncertainty analysis (Yoe, 2012: 30).

Organizations have to adapt to their external environments to survive as a requirement of the open system. A wrong decision that a company may take concerning the external environment may cost a lot. One of the most important factors that affect the decisions is the degree of uncertainty. The change ratio in the customers, government, employee unions and competitors that are outside the organization can be defined as environmental uncertainty (Habib et al., 2011: 258). If the degree of uncertainty; the pressure between the competitors decreases, variable customer demands decrease and radical technological changes occur less. On the other hand, if the degree of uncertainty is high; variable customer demands, radical technological changes, heavy competition conditions will occur, which will lead to low stability. As these changes cannot be predicted beforehand, they create a pressure on the organizations (Lin, 2005: 439).

It is acknowledged that there is a positive relation between the firm performance in uncertain environmental conditions and its capability to respond to the new environmental information and adapt to these environmental conditions. The competition and production strategies of a company under regular environmental conditions aim at performing activities to identify, maintain and defend a stable position; whereas, the most important objective of the strategies set under unsteady environmental conditions is to have elasticity (Uzkurt, 2002: 2). On the other hand, Pagel and Krause (1999: 324) concluded that there isn't any relation

between the operational elasticity and environmental uncertainty in the study they conducted on the manufacturing companies in the Northern America.

Uncertainty (Chen and Paulraj, 2004; Li and Lin, 2006; and Wong et al., 2011; Davis 1993, Fynes et al., 2004; Qi et al., 2011) was classified under three categories: Demand uncertainty, supply uncertainty and technological uncertainty.

Demand uncertainty refers to the changes in the preferences and number of customers that determine the products, plans and strategies of businesses under changing environmental conditions. Contrary to today's traditional sales and marketing methods, customer demands and preferences are changing very rapidly. This leads to uncertainty and instability concerning the quantity, location and time of customer demands (Li and Lin, 2006: 1645). Demand uncertainty is related to the change ratio in the product market and the change ratio of the buyers. High market uncertainty may lead to frequently changing customer orders and changing production plans, sales plans and etc. If the change is so frequent, it may push companies to cooperate and integrate with their suppliers (Lee et al., 2009: 192).

Supply uncertainty is defined as the condition in which the product of a supplier and its delivery cannot be estimated. It covers the uncertainty regarding the quality of the product supplied, delivery reliability, delivery time and cost. The company may delay and even stop its production process if the supplier delivers an inappropriate material or if the delay in the delivery of the material is beyond what is anticipated (Li and Lin, 2006: 1645). It is not possible to have an affective mechanism to manage the supplier relationships under the uncertain market conditions. In other words, increasing the relative attraction of supplier alliances under uncertain conditions can reduce complexities. The positive relation between uncertainty and supplier cooperation was also supported by empiric studies (Lee et al., 2009: 191). Although there is a positive relation between the quality of the buyer-supplier relations and the firm performance when the environmental uncertainty is low, there does not exist such a positive relation under high environmental uncertainties (Srinivasan et al, 2011: 267).

Technological uncertainty refers to the degree and speed of potential innovations and changes in the technology. The companies usually try to get a technological position to cope with this uncertainty. Therefore, they have to bear a significant cost. Competitive uncertainty–intensity refers to the extent of competition that a business faces. Companies focus more on their competitors and try to reduce the level of this uncertainty (Uzkurt, 2002: 3). Li and Lin (2006: 1644) stated that information should be shared more with the members in the supply chain network in order to decrease the risk of demand uncertainty. It is very difficult to estimate the future in the electronic industry that is one of the sectors functioning based on technological

competition. As the products in the market are replaced very rapidly, it is very hard to be accurate in estimating the expectations (Lee et al., 2009: 191).

Griffiths and Wall described two possibilities to avoid uncertainty. They defined poor uncertainty conditions as positive conditions for change and new opportunities. However, they defined strong uncertainty conditions as conditions in which a continuous and routine structure should be preferred (Griffiths and Wall, 2005: 568). Coping with uncertainty is the essence of the organizational process. The arena where the open system organizations generate their resources also sets the firm perspectives and leads to uncertainty. Organizations try to cope with the uncertainties in certain activities such as information processing and organizational learning. At least conditions that will not create any problems for the organizational design and the ways to cope with the uncertainty should be identified (Anderson and Tushman, 2001: 682).

Financial performance

Financial performance is a measure of how well profit-making organizations achieves the financial targets to ensure profit maximization by using financial ratios. Financial performance can be measured both systematically and by using existing concrete data; therefore, it requires lower cost and less time. To the contrary, measurement of non-financial performance requires higher cost and more time. There are many published papers about the organizational performance measurement systems including the performance measurement and use in addition to the financial and non-financial measurements (Coşkun and Bayyurt, 2008: 80).

Ratio analysis, analysis of comparative statements, trend analysis, vertical percentages analysis, flow of funds statement are the most preferred methods to measure the financial performance. Ratio analysis is the most common one. Liquidity ratios, leverage ratios, activity ratios and profitability ratios are calculated in ratio analysis. There are various methods to measure the success of companies. Traditional performance measurement methods are the most common methods that have been increasingly used in the last 2 to 3 decades. Return on Assets-ROA, Return on Equity-ROE, Earnings per share-EPS and Earnings before interest, tax, amortization and depreciation-EBITDA are the most widely used traditional financial performance measurement methods (Gökbulut, 2009: 54).

LITERATURE REVIEW

Companies have been increasingly using supply chain and logistics management as an important strategic tool to cope with competition in the market (Cheng et al., 2005; 287). Competition in today's world is a battle to survive. Furthermore, it is necessary to be independent and responsive in order to maintain or increase the market share. Companies try to

create customer value for competitive advantage and obtain a position such as cost leadership or differentiation by increasing market share or profitability (Thatte, 2007: 42).

Lean SCM and Agile SCM that are two different supply chain management strategies have different advantages and disadvantages in terms of competitiveness or competitive strategy to be implemented. Agile supply chain strategy focuses on responsiveness. Therefore, it aims to respond to the changing demands of customers rapidly. It is difficult for companies that will implement the cost leadership strategy to have high level of responsiveness. The companies that will use the lean supply chain strategy will have difficulties in becoming highly adaptive through differentiation strategy because they use lean production techniques, aim at reducing wastes and stocks and performing long-term productions.

Companies have to identify and preserve their competitive positions as much as they try to set competitive strategies. They have to match their resources and capabilities with the customer demands for a competitive position. The competitive strategy should be set and maintained in a way that a company can use its resources and capabilities better than its competitors. To initiate the design of a supply chain, competitive strategy should be determined first (Prasad et al., 2012: 189).

Qi et al. found in a study they performed in 2011 that cost leadership strategy and lean supply chain strategy had a positive impact on the firm performance when the environmental uncertainty was low; whereas, differentiation strategy and agile supply chain strategy had a greater impact on the firm performance when the environmental uncertainty was high (Qi et al., 2011: 381).

It was found that average companies using at least one of the competitive strategies got a positive impact on the financial performance compared to the other companies and also profitability and market share increased when cost superiority or a good level of differentiation was achieved (Yaşar, 2010: 311).

Many researchers in the field of operations-transactions management (Williams et al., 1995; Ward and Duray, 2000) carried out studies on the production strategies. Some of these studies tried to determine the relation between the competitive strategies and production strategies with diligence. These studies concluded that the use of production strategies and competitive strategies jointly in harmony enabled companies to achieve a better performance. Companies started to create other chains that will help them achieve competition and production strategies and objectives once the supply chain was introduced.

Gyampah and Acquaah (2008) concluded in a study they performed that cost leadership strategy had a greater impact than the differentiation strategy on the production strategies such as distribution, elasticity, low cost and quality through the analyses they performed to test the

relation between the production strategies, competitive strategies and firm performance. Meanwhile, it was found that both cost leadership and differentiation strategies had a positive impact on the market share increase, which is one measures of the company performance, while cost leadership strategy had a greater positive impact (Gyampah and Acquaah, 2008: 585-586). Likewise, Ward and Duray found a high positive relation between the differentiation strategy and quality, which is a production strategy, and firm performance. Ward and Duray (2000) tried to test the relation between the environmental dynamism, competitive strategies and firm performance in their conceptual modeling study regarding the production strategies. They found a positive and significant impact on environmental dynamism and differentiation strategy, while they didn't find any significant impact on the cost leadership strategy (Ward and Duray, 2000: 131).

In another study of Ward et al. (1995), the relation between the environmental concern, competition priorities and firm performance was tested. The data analysis showed striking differences between the competitive strategies in the cases of high and low company performance. It was observed that both differentiation and cost reduction strategies were used to respond to the increased competition in case of low performance. On the other hand, it was found that only differentiation by improving the delivery performance could respond to the environmental stimulants in case of high performance. Therefore, it was also found that the stimulant danger in the form of 'stuck in the middle' defined by Porter (1980) was faced in case of low performance (Ward at all, 1995: 21-22).

Halawi, McCarthy and Aronson (2006) found in their study a significant relation between the information technologies and competitive strategies (Halawi, McCarthy and Aronson, 2006: 384).

Cortes et al. (2012) who studied the characteristics of organizational structure relating to the hybrid competitive strategy compared the competitive strategies in cases of high differentiation and low cost. They concluded that high degree of formalization associated with cost leadership strategy; whereas, low degree of formalization was not associated with the differentiation strategy. The findings of the comparison showed that the hybrid competitive strategy influenced the firm performance positively (Cortes et al., 2012: 993).

In a study that explored the relation between the competitive strategy and firm performance moderated by the technological capabilities, the survey applied to 253 companies in the information and communication technologies industry in Spain revealed that the technological capabilities influenced the firm performance positively. However, unlike previous studies, this study gives specific consideration to how the relationship between competitive strategies and performance is moderated by technological capabilities (Ortega, 2010: 1273).

Dadzie et al. (2012) claimed in their study analyzing the relation between Ghana's organizational culture, competitive strategy and firm performance demonstrated that the organizational culture had a direct and indirect impact on the firm performance. Furthermore, they also claimed that the hierarchy culture and competitive strategy influenced the firm performance. Chan (2005) stated that there is significant relation between the competitive strategy and the production and logistics system performance.

Balmeceda (2008) analyzed the relation between the environmental uncertainty, payment, performance and asymmetric information in his study and claimed that the environmental uncertainty influenced the wage or performance increase or sensitivity. He concluded that the wages were increased to improve the performance as the environmental uncertainty increases, while the performance sensitivity decreased.

There should be a strong relationship and communication with the members of the supply chain to respond to the supply chain uncertainty. Fang and Whinston (2011:189) claimed that option contract might be an effective method to increase especially the supplier profitability and supply chain efficiency in case of a supply chain uncertainty. Paulraj and Chen (2007: 35) explored the impact of the Strategic Supply Management practices as a response to the Demand uncertainty, Supply uncertainty and technological uncertainty in their study and measured how certain variables such as strategic purchasing, long-term relationships, communication between firms, cross organizational teams and supplier integration influenced uncertainty. In conclusion, they concluded that there was a significant relation between these variables and strategic supply chain and thus uncertainty. Kinra and Kotzab (2008: 289) found in their study that environmental uncertainty, competitive and organizational strategies are associated with the firm performance.

On the other hand, Fynes, Burca and Marshall (2004: 183) explored in their study how Demand, Technology and Supply uncertainties and quality of supply chain relations influenced the supply chain performance and found that the quality of supply chain relations and all uncertainties but the technology uncertainty influenced the supply chain performance. Kwak and Gavirneni (2011: 271-278) conducted a study on the chain policies, uncertainty reduction and supply chain performance and concluded that the entire supply chain is positively influenced and chain performance increased when the retailers grew to become a chain and used chain policies rather than retail policies. Fynes et al. (2005: 3303) stated that the quality of supply chain relations had an impact on the supply chain performance. They claimed that this influenced the chain performance efficiency regardless of the competitive environmental conditions.

When the national and foreign studies on the environmental uncertainty and firm performance are reviewed, it is understood that majority of the authors acknowledges the importance of uncertainty (Vechiato, 2012: 436; Lin, 2006: 439; Lee et al., 2009: 192; Chen and Paulraj, 2004: 122; Kocabaşoğlu et al., 2007: 1143; Pagel and Krause, 1999: 308; Habib et al., 2011: 256, Yoe, 2012: Hill, 2008, Rodrigues et al., 2008: Griffiths and Wall, 2008). Moreover, some of the authors claim that there is a relation between the change under the uncertainty conditions and firm performance (Paulraj and Chen, 2007; Haleblian and Finkelstein, 1993; Badri et al., 2000, Qi et al., 2012; Claycomb et al., 2002). Many authors attempted to find the moderating effect of the environmental uncertainty on the relation between various variables (such as competitive structure, firm structure, management structure, being an old vs. new company, production strategies, supply chain strategies) that they thought influenced the firm performance instead of testing the direct impact of the environmental uncertainty on the firm performance. Some of these studies are summarized as follows:

Study of Badri et al. (2000) on the business strategies, environmental uncertainty and performance: Analysis of the data relating to the manufacturing companies in the United Arab Emirates showed that the successful companies were the ones that used environmental variables as an effective control tool and that had high performance.

Hosseini and Sheikhi (2012) tested the relation between the competitive capability and firm performance under the perceived environmental uncertainty and found a significant association between the competitive capability and customer satisfaction, financial performance and market performance. Furthermore, they concluded that the perceived environmental uncertainty had a moderating impact on the competitive capability and firm performance. It was concluded that cost leadership capability influenced the customer satisfaction, while the differentiation capability influenced the financial performance better under different uncertainty conditions. Moreover, they also concluded that differentiation had a greater impact on the market performance.

Claycomb et al. (2002) found a relation between the product quality knowledge and firm performance in their study in which they explored the association between the product quality knowledge, production technology and firm scale under the environmental uncertainty. Parnell et al. (2012) didn't find any clear relation between the market uncertainty, technology uncertainty and competitive uncertainty in their study entitled "Competitive strategy, uncertainty and performance: an exploratory assessment of China and Turkey". It was observed that the firm managers in both countries preferred the differentiation strategy of Porter for market differentiation. While the local firms in Turkey tried to improve their competitive advantage through cost reduction and increasing market share, global firms in Turkey aimed at improving

their competitive advantage through cost control and more innovation. It was stated that the firms in both countries had competitive uncertainty and especially the ones in Turkey needed strategic analysis and planning more due to their global competitors. It was also found that the technology uncertainty and market uncertainty were low in both countries.

Daft et al (1987) conducted a study on 50 manufacturing companies in Texas, USA and concluded that the degree of uncertainty in the fields of consumption, economy and competition was higher than the one in the technological, regulatory and socio-cultural fields. Furthermore, the firm managers stated that they used the personal information sources more when the uncertainty was high in their industries. It was concluded that high-performing companies They concluded that the presidents of high performing firms carried out more comprehensive surveillance regarding the strategic uncertainty compared to the presidents of low performing firms.

Sung et al (2010) conducted a study to identify the relation between the time-oriented strategies and performance of design companies in Taiwan under environmental uncertainty and claimed that the companies designing new products aimed at gaining a competitive advantage, although there would be unknown variables regarding the environment no matter which business or company strategy is used. The analysis of the research data revealed that uncertainty influenced the business performance criteria such as adaptation and innovation directly. Moreover, it was concluded that the time-oriented strategy was associated with the environmental uncertainty and this influenced the business performance positively.

Figure 3: Conceptual Model of Research
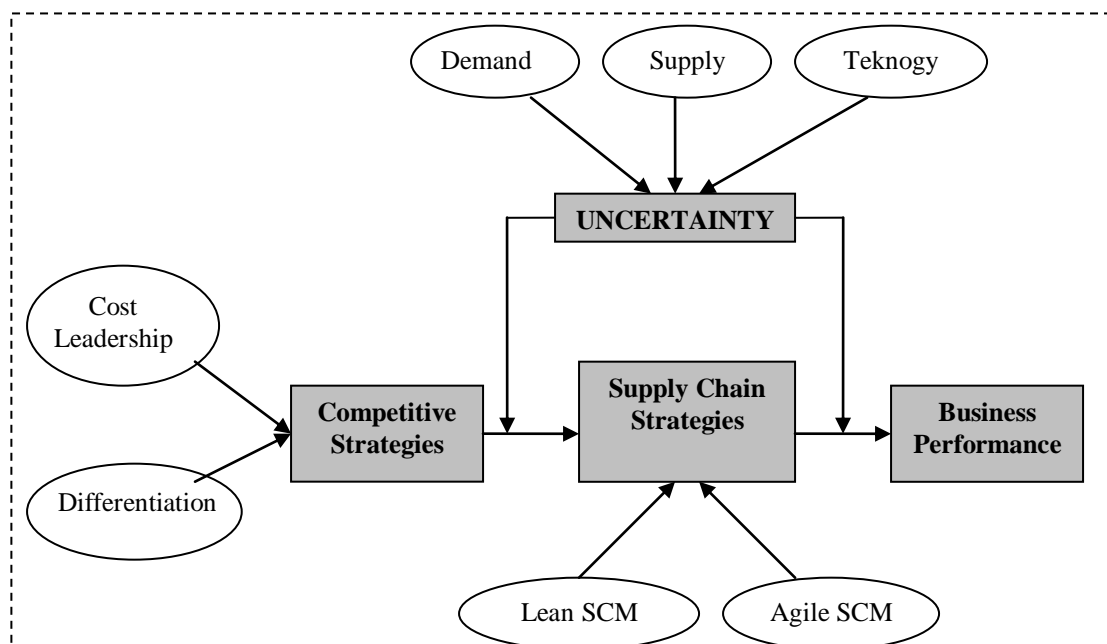
RESEARCH METHODOLOGY

Design & Data Collection

The research data was collected through a survey from the manufacturing companies listed in İstanbul Stock Exchange (Borsa İstanbul). These firms were preferred because they were the largest and most institutionalized firms in Turkey. Appointments were taken from 174 firms first by e-mails and then by telephone to apply the questionnaires. 90 firms accepted to respond to the questionnaire. Survey of a large majority (more than 90%), production, marketing, accounting and purchasing directors or deputy directors have been answered.

Three methods are used to check if the data set is suitable for the factor analysis; which are *correlation matrix, Barlett test and Kaiser-Mayer-Olkin (KMO)* test. In the interpretation of the KMO value; if the value is greater than 0,50, it means that the data set is suitable for the factor analysis (Kalaycı, 2005: 321-322).

Table 1: Suitability of the Data Set for Factor Analysis and Eigenvalues

Factors		Variable	KMO	Barlett	Eigenvalue	Total Eigenvalue
Uncertainty	Demand uncertainty (TLB)	3			22,56%	
	Supply uncertainty (TDB)	3	0,526	0,000	21,49%	63,78%
	Technology uncertainty (TKB)	2			19,73%	
Competitive strategies	Cost Leadership str.(ML)	5	0,681	0,000	25,61%	49,83%
	Differentation str.(FS)	4			24,22%	
Supply strategies	Lean Supply (YT)	5	0,718	0,000	27,95%	52,45%
	Agile Supply (CT)	5			24,49%	
Business Performance	Business Performance (FP)	6	0,792	0,000	61,45%	61,45%

It was agreed that the data set was suitable for the factor analysis because the table showed that the KMO values of the variables relating to the factors were greater than 0,50 and Barlett values were equal to 0,000.

Although it was desired to apply the research data by sampling method, only 90 firms responded. 90/174=0,517 (52%) of the firms responded to the questionnaire. There would be an acceptable measurement error or margin of error because only the sample could be analyzed rather than the entire population. Although 120 firms were expected to respond to ensure a margin of error or confidence interval in this study, the confidence interval was 7.2 because 90 firms responded. Moreover, the confidence level should be found to determine to what extent

the uncertainty related to the sampling could be tolerated. The confidence level of this study was found to be 95% (Baş, 2006: 47). Harman's single factor test was performed to understand if there was any common method variance. The single factor test performed yielded one factor with an eigenvalue greater than 1. The variance value of this factor was 0,189. This ratio shows if there is any variance issue (Podsakoff and diğerleri 2003; Chang et al. 2010; Malhotra et al. 2006). Therefore, it can be said that there isn't any common method variance bias in the data.

Table 2: Population, Sample and Sample Percentage of Firms
in the Manufacturing Industry Listed in BIST from which the data was collected

MANUFACTURING INDUSTRY SECTORS	N	Sample (n)	Sample (%)
Food, beverage and tobacco	27	13	48
Textile, wearing apparel and leather	31	14	45
Wood products including furniture	2	0	00
Paper and paper products, printing and publishing	17	10	59
Chemicals petroleum, rubber and plastic products	26	14	54
Non-metallic mıneral products	26	12	46
Basic metal industries	15	10	67
Fabricated metal products, machinery and equipment	27	16	59
Other manufacturing industry	3	1	33
TOTAL	174	90	52

Source: Compiled from BIST, firm information of the year 2012.

Measures

Four categories were identified for the analysis: competitive strategy (Overall cost leadership strategy, Differentiation strategy), Supply chain strategies (Lean supply chain strategy, Agile supply chain strategy), Environmental uncertainty (Demand uncertainty, Supply uncertainty and Technology uncertainty) and Firm performance. The variables in these factors were measured by Likert scale from 1 to 5. Table 3 shows the factors, factor loading, reliability coefficients and literature references regarding the variables. Furthermore, the firms responding to the questions about firm performance were also asked to score the last three-year performance of their firms compared to their primary competitors.

Psychometric Properties

Table 3 shows the Cronbach's Alpha values of each factor in the scale. The acceptable limit of reliability coefficient in studies is ,70. However, the acceptable limit is ,60 in exploratory studies (Hair et al., 1998; Hair et al., 2010). The lower limit in this study was agreed to be ,60 As we thought that such an empirical study in which different variables are used has not been carried out in Turkey previously, we are of the opinion that the reliability ratios of the scale are acceptable. After the reliability analysis, the quantitative verification of the factor structure in the questionnaire should be performed (Baş, 2006: 193). Factor analysis is a common statistical method used to identify small number of significant and independent factors that can be used to represent relationships among sets of interrelated variables. Contrary to the regression analysis, factor analysis attempts to identify general variables that are called factors by combining highly correlated and dependent sets of variables (Kalaycı, 2005: 321).

Variables with a factor loading lower than 0.4 were excluded from the analysis. The symbol * was used in Table 3 to indicate the variables that were excluded. For example; the variables TLB4, TLB5 and TLB6 in the demand uncertainty table were excluded from the analysis due to their low factor loadings.

Table 3: Factor loadings, reliability values and references of the dependent variables.

Factors	Factor Loads		Cronbach's Alpha	References
	Demant Uncertainty (TLB)			Chen and Paulraj (2004), Arıöz ve Yıldırım (2012), Uzkurt (2002), Qi at all, (2011), Li and Lin (2006), Jones (2004), Gravelle and Rees (2004), Rodriguez at all, (2008), Paulraj and Chen (2007), Fynes at all, (2004), Özen (2011), Fang and Whinston (2011), Rodrigues at all (2008), Davis (1993), Claycomb at all (2002)
	TLB1	0,698		
	TLB2	0,827		
	TLB3	0,688		
	TLB4	NA*	0,637	
	TLB5	NA*		
	TLB6	NA*		
	Supply Uncertainty (TDB)			Chen and Paulraj (2004), Arıöz ve Yıldırım (2012), Uzkurt (2002), Qi at all, (2011), Li and Lin (2006), Jones (2004), Paulraj and Chen (2007), Fynes at all, (2004), Özen (2011), Davis (1993)
	TDB1	0,864		
	TDB2	0,845		
	TDB3	0,555	0,630	
	TDB4	NA*		
	TDB5	NA*		
	Technology Uncertainty (TKB)			Chen and Paulraj (2004), Arıöz ve Yıldırım (2012), Uzkurt (2002), Qi at all, (2011), Li and Lin (2006), Jones (2004), Gravelle and Rees (2004), Fynes at all, (2004), Sözen (2011), Hill, (2008), Davis (1993)
	TKB1	0,903	0,719	
	TKB2	NA*		
	TKB3	0,822		

Note: The leftmost rotated column label reads "UNCERTAINTY" spanning all factor rows.

COMPETİTİVE STRATEGIES		*Cost Leadership Str. (ML)*		Porter (1980), Porter (2000), Thatte (2007), Warren (2002), Hooley at all (2008), Eren (2002), Hill and Jones (2009), Cheng (2005), Qi at all (2011), Leitner and Güldenberg (2010); Gyampah and Acquaah, (2008), Ward and Duray,(2000)
		ML1	0,568	
		ML2	0,654	
		ML3	0,625	0,675
		ML4	NA*	
		ML5	0,661	
		ML6	NA*	
		ML7	689	
		Differantation Str. (FS)		Porter (1980), Porter (2000), Thatte (2007), Warren (2002), Hooley at all (2008), Eren (2002), Hill and Jones (2009), Cheng (2005), Qi at all (2011), Leitner and Güldenberg (2010); Gyampah and Acquaah,(2008), Ward and Duray, (2000)
		FS1	0,574	
		FS2	0,699	
		FS3	0,772	0,688
		FS4	0,691	
		FS5	NA*	
Supply Chain Strategies		*Lean Supply (YT)*		Wang at all. (2004), Ross (2008), Mentzer at all (2006), Ross (2011), Chopra and Meindl (2007), Başkol (2011), Harrison at all (1999), Christopher and Towill (2000), Power (2005), Naylor at all (1999), Christopher at all (2004), Xu (2006), Qi at all (2011), Sarkis (1999), Srivastava (2007)
		YT1	0,714	
		YT2	0,825	
		YT3	0,775	
		YT4	0,603	0,806
		YT5	NA*	
		YT6	0,615	
		YT7	NA*	
		Agile Supply (CT)		Wang at all. (2004), Ross (2008), Mentzer at all (2006), Ross (2011), Chopra and Meindl (2007), Başkol (2011), Harrison at all (1999), Christopher and Towill (2000), Power (2005), Naylor at all (1999), Christopher at all (2004), Xu (2006), Qi at all (2011), Sarkis (1999), Srivastava (2007)
		CT1	NA*	
		CT2	NA*	
		CT3	0,527	
		CT4	0,568	0,710
		CT5	0,583	
		CT6	0,807	
		CT7	0,776	
Business Performance		*Firma Performansı (FP)*		Kaplan and Norton (1996), Kinra and Kotzab (2008), Kwak and Gavirneni (2011), Qi at all (2011), Mabberley (1997), Knight and Bertoneche, (2001), Brealey and Myers, (2003b), Hirschey at all.(2009), Higgins, (2000), Atrill, (2009), McLaney (2009),
		FP1	0,840	
		FP2	0,816	
		FP3	0,748	0,873
		FP4	0,844	
		FP5	0,821	
		FP6	0,607	

* Items were deleted due to the low factor loadings or deleted in the validation process.

Before identifying the structural model, the uncertainty level of the perceived environmental uncertainty should be found in order to assess its moderating impact on the other variables. To this end, the cluster analysis was applied to the data set in SPSS 20,0 software.

The perception scores of companies about the demand uncertainty, supply uncertainty and technology uncertainty were averaged in the cluster analysis and those below the average formed the first cluster- group and those above the average formed the second cluster- group. The first group represented *high uncertainty- unstable environment,* while the second one represented *low uncertainty-stable environment.* 43 firms were categorized under high uncertainty group, whereas the low uncertainty cluster had 47 firms.

Table 4: Results of Cluster Analysis regarding the Uncertainty Level

| Cluster	Low Uncertainty (n=47)	High Uncertainty (n=43)	f	sig.
Demand Uncertainty	2,76	2,93	1,342	,000
Supply Uncertainty	4,08	4,18	,902	,047
Technology Uncertainty	2,43	4,10	310,051	,001

The structural model can be established and tested after the cluster analysis. At that stage, the structural model was applied separately to 47 firms in the low-uncertainty environment cluster and 43 firms in the high uncertainty environment cluster.

ANALYSIS AND RESULTS

The fit indices found for the confirmatory factor analysis were acceptable. Furthermore, chi square test results, high t- values and reliability coefficients greater than ,60 show than there is no concern about the reliability and validity of the data (Shook et al., 2004:401; Byrne, 1998:111). The number of observation in the sample of this study was 90. Considering the SEM studies in the literature, it can be stated that the sample size of this study assessed according to the number of variables is adequate (Narasimhan and Jayaram, 1998:588).

Multi-group (low uncertainty and high uncertainty) structural equation model was used to determine the relation between the competitive strategies, supply chain strategies and firm performance. The structural equation model is commonly employed in marketing and strategic management studies. For the application of the model, the theoretical model was structured in SPSS AMOS 20.0 software according to the factors identified. Then, path coefficients were found through analysis. After the main model was applied, the results of the structural model tests developed according to the high perceived environmental uncertainty and low perceived environmental uncertainty are presented in Figure 4 and Figure 5.
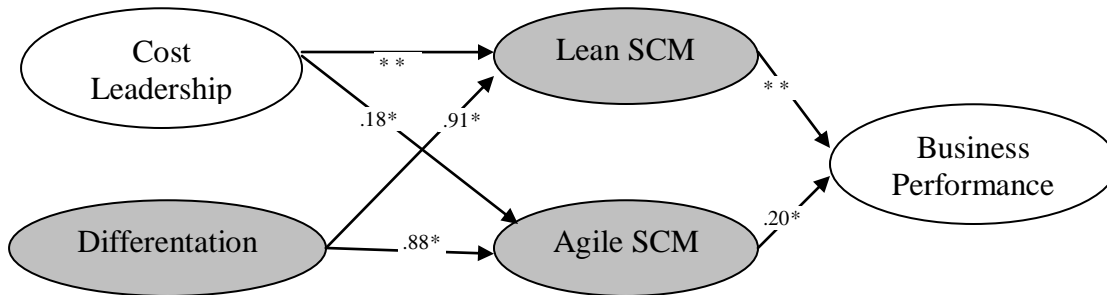
Figure 4: Parameters of the Structural Model under High Environmental Uncertainty
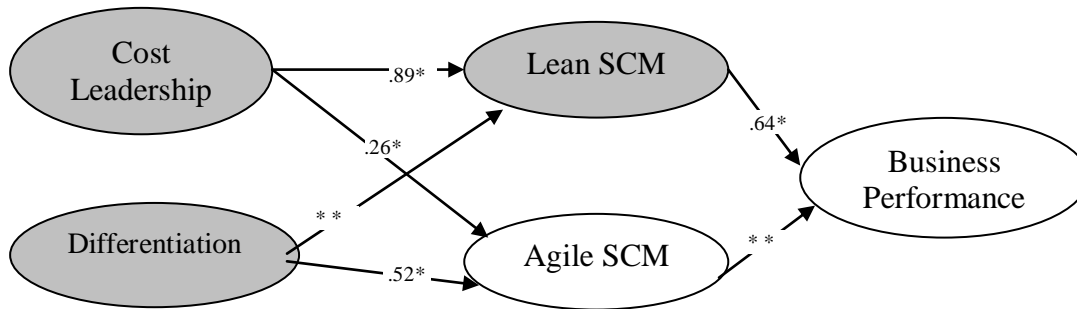
χ^2: 17,663, df: 9, X2/df=1,963, GFI: .966, RMR: .300, AGFI: .863, NFI: .891, CFI: .998, RMSEA: .041.
*p<.05 ** p>.05

Figure 5: Parameters of the Structural Model under Low Environmental Uncertainty

χ^2: 28,966, df: 12, X2/df=2,413, GFI: .951, RMR: .443, AGFI: .806, NFI: .844,CFI: .989, RMSEA: .047.
*p<.05 ** p>.05

Table 5: Maximum Likelihood Values and Significance (p) Levels of the Structural Model

MODEL RELATIONS			MLE	S.E.	C.R.	P
Lean SCM	↔	Cost Leadership	,891*	,775	1,150	,031
Lean SCM	↔	Differantation	,906*	,728	1,245	,049
Cost Leadership	↔	Agile SCM	,251*	,135	1,859	,036
Agile SCM	↔	Differantation	,877*	,823	1,066	,026
Agile SCM	↔	Business Performance	,197*	,468	0,421	,014
Lean SCM	↔	Business Performance.	,642*	,528	1,216	,037
Differantation	X	Uncertainty	,068	,127	0,535	,592
Cost Leadership	X	Uncertainty	-,020	,124	0,161	,871
Business Performance	↔	Uncertainty	,453*	,150	3,020	,003
Lean SCM	↔	Uncertainty	,183*	,139	1,317	,047
Agile SCM	↔	Uncertainty	,640*	,416	1,539	,007

*p<,05

No significant relation was found between the differentiation strategy and overall leadership strategy, which are the competitive strategies, and uncertainty according to the results of the structural model. Significant relations were found between the other variables in the model. According to the results of the structural model, the relational parameters, acceptance or rejection of the predetermined three hypotheses are as follows.

Hypothesis 1: *Competitive strategies influence the supply chain strategies significantly.*

Hypothesis	Relation	MLE	Significant
H1a	ML ↔ YT	(.89)*	p .031
H1b	ML ↔ CT	(.26)*	p .036
H1c	FS ↔ YT	(.91)*	p .049
H1d	FS ↔ CT	(.88)*	p .026

*p<0,05

According to these findings, it can be stated that the competitive strategies have a significant impact on the supply chain strategies. While the overall cost leadership strategy has a minor impact on the agile supply chain strategy, it has a great influence on the lean supply chain strategy. It was found that differentiation strategy influenced both lean and agile supply chain strategies significantly.

Hypothesis 2: *Environmental uncertainty has a moderating effect on the competitive strategies and supply chain strategies.*

Hypothesis	Relation	MLE	Significant
H2a	Low uncertainty: ML↔CT (.18)*	p .047	
	High Uncertainty: ML↔CT (.26)*	p .036	
H2b	Low uncertainty: ML↔YT (**)	p .592	
	High Uncertainty: ML↔YT (.89)*	p .031	
H2c	Low uncertainty: FS↔CT (.88)*	p .026	
	High Uncertainty: FS↔CT (.52)*	p .048	
H2d	Low uncertainty: FS↔YT (.91)*	p .049	
	High Uncertainty: FS↔YT (**)	p .871	

*p<0,05   ** No significant relations.

According to these findings, it can be stated that the environmental uncertainty has a moderating effect on the competitive and supply chain strategies. Low or high level of environmental uncertainty influences the competitive and supply chain strategies. It was found that the low environmental uncertainty (stable uncertainty) had a high and significant impact on the differentiation strategy and lean and agile strategies, which are the competitive strategies.

On the other hand, it was found that high environmental uncertainty (volatile uncertainty) had a high and significant impact on the overall cost leadership strategy and lean supply chain strategy. Furthermore, it was also found that if influenced the differentiation strategy and agile supply chain strategy significantly.

Hypothesis 3: *Environmental uncertainty has a moderating effect on the supply chain strategies and firm performance.*

Hypothesis	Relation	MLE	Significant
H3a	Low uncertainty: YT↔FP (**)	p .671
	High Uncertainty: YT↔FP (.64)*	p .037
H3b	Low uncertainty: CT↔FP (.20*)	p .014
	High Uncertainty: CT↔FP (**)	p .458

*p<0,05   ** no significant relations.

Based on the findings of this study, it can be stated that the environmental uncertainty has a moderating effect on the supply chain and firm performance. It appears that low environmental uncertainty and agile supply chain strategy influence the financial performance. Likewise, it seems that lean supply chain strategy influences firm performance under high environmental uncertainty.

DISCUSSION, MANAGERIAL IMPLICATIONS AND CONCLUSIONS

Today's firms seek for innovation and perform various practices in order to be more competitive profitable and productive. They try to set a competitive strategy or a position to survive and compete with the other firms. The competitive strategies include cost leadership, differentiation and focus strategies. These strategies have both pros and cons. Firms set appropriate competitive strategies in line with their structures and conditions to carry out their activities. Likewise, they may also perform supply chain management practices in order to maximize profits, increase productivity and establish long-term relationships. Lean and Agile supply chain strategies have both pros and cons. Besides, conditions of environmental uncertainty also influence the activities, processes, decisions and thus strategies of the firms. Therefore, changes considered as uncertainty are thought to influence the processes of the firms.

This study aimed at determining the impact of competitive strategies and supply chain strategies on the firm performance. The impact of uncertainty conditions was also taken into account unlike the other studies. Furthermore, data was collected according to the scale of the study from the largest and most institutionalized enterprises of Turkey that were listed in Borsa Istanbul. In this way, the study attempted to identify if their competitive strategies and supply

chain strategies influenced the firm performance differently. To this end, hypotheses were tested by analyzing the data collected from the manufacturing companies listed I BIST with respect to their perceptions.

According to the analysis results, three hypotheses were accepted. To test the H1 hypothesis claiming that "Competitive strategies influence the supply chain strategies significantly", structural equation model was used and overall cost leadership strategy was found to have a higher impact on the lean supply chain strategy. On the other hand, the differentiation strategy was found to influence both lean and agile supply chain strategies positively. According to this finding, the manufacturing companies listed in BIST choose the lean supply chain strategy when they applied the overall cost leadership as a competitive strategy. Likewise, those companies that choose the differentiation strategy as a competitive strategy use both the lean and agile supply chain strategies. As the cost leadership strategy aims to reduce the overall costs, while the lean supply chain strategy aims at reducing the wastes, redundant work, transactions and stocks; high mutual relationship was an expected result. The companies choosing the differentiation strategy attempt to create a competitive advantage against their competitors by differentiation a work, transaction or process. Although a high relation was expected between the differentiation and agile supply chain strategies in this study, the fact that the differentiation strategy associated with both the agile and lean supply chain strategies could be explained by different perspectives of the firms.

The second hypothesis of the study that was "Environmental uncertainty has a moderating effect on the competitive strategies and supply chain strategies" was accepted as a result of the structural model analysis. It was found that the competitive and supply chain strategies varied depending on the low and high environmental uncertainty conditions. *Differentiation* strategy as a competitive strategy was found to have a greater impact on the lean and agile supply chain strategy under low environmental uncertainty (stable environment) conditions compared to the cost leadership strategy. Cost leadership strategy did not have any significant impact on the lean supply chain strategy, where it influenced the agile supply chain strategy significantly. Accordingly, Companies that perceived low environmental uncertainty preferred differentiation as a competitive strategy and agile supply chain as the supply strategy because it could be said that they attempted to create a competitive advantage by differentiating from the competitors considering that they would focus on low cost. Therefore, they might choose agile supply strategy for the purpose of differentiation.

Likewise, *cost leadership* strategy was found to influence the lean and agile supply chain under high uncertainty (volatile environment) conditions greater than the differentiation strategy. Differentiation strategy didn't have any significant impact on the lean supply chain strategy,

while it influenced the agile supply significantly. On the other hand, cost leadership was found to influence lean and agile supply chain strategies positively, while it had a greater impact on the lean supply chain strategy. According to this finding, firms prefer the cost leadership as a competitive strategy and lean strategy as a supply strategy under the high uncertainty conditions they perceive. The reason for this may be because they try to create a competitive advantage by reducing the total costs instead of taking risk by differentiation strategy under high uncertainty conditions.

The third hypothesis of the study that was "Environmental uncertainty has a moderating effect on the supply chain strategies and firm performance" was tested by structural equation model and then accepted. The lean and agile supply chain strategies were found to influence the firm performance that was measured based on perceptions. While the *agile supply* chain influenced the firm performance positively under low environmental conditions, lean supply chain didn't have any significant impact on the firm performance. However, *lean supply* chain influenced the firm performance positively under high uncertainty; whereas agile supply chain didn't have any significant impact on the firm performance. According to this finding, the competitive and supply strategies preferred by the manufacturing companies listed in BIST vary when the environmental uncertainty they perceive changes. This may be because the adaptation to the external environment was important for the firms.

As a general conclusion of this study, it may be stated that *companies choose differentiation strategy as a competitive strategy and agile supply chain as a supply chain strategy when the environmental uncertainty is low, which influences the perceived performance of the companies significantly. However, cost leadership strategy and lean supply chain strategy influence the firm performance significantly and positively under high uncertainty conditions.*

Differentiating the products, prices, distribution and promotional activities against the average competitors because the risk might be low under low environmental uncertainty can strengthen competitive position. Therefore, a higher profit can be generated compared to the average competitors. Agile supply chain strategy can also be used jointly with the differentiation strategy in order to focus more on the customers and to respond to the customer requirements more quickly. In this way, companies can maximize their profits more easily. However, cost leadership strategy can be used in order to reduce the overall costs without compromising the customer expectations, quality and service under high environmental uncertainty conditions because the risk will also be higher. Moreover, a competitive position can be obtained and profits can be maximized through lean supply chain strategy that aim at reducing the non-value adding products, processes, activities, transactions, redundant stocks and raw materials in order to support the cost reduction.

Comparing the findings of this study with those of the previous studies, it is understood that they are consistent because the other studies (Narasimhan and Kim, 2002; Li et al., 2006; Demirdöğen and Küçük, 2007; Ganeshan et al., 2002; Gunasekaran, Patel and McGaughey, 2004; Wisner, 2003; Oi et al., 2010; Shanchez and Perez, 2005; Harrison and New, 2002; Randall and Ulrich, 2001; Kim, 2006; Srinavasan et al., 2011; Merschmann and Thonemann, 2011) i.e. the supply chain management influenced the firm performance positively.

It is also understood that the findings of this study are consistent with the other studies relating to the moderating impact of the environmental uncertainty on supply chain and supply chain performance (Wong et al., 2011; Fynes et al, 2004). However, they are not totally consistent with the study of Qi et al. (2011). Qi, Zhao and Sheu (2011) concluded in their study performed in China that firm performance was influenced positively and significantly by cost leadership and lean supply chain strategy under low uncertainty conditions and by differentiation strategy and agile supply chain strategy under high uncertainty conditions. This difference can be explained by many reasons, which may include different business cultures in the countries where the firms are established and different working cultures. Another reason may be because the firms from which data was collected in this study were mainly family-owner businesses, the firms were not institutionalized enough to perceive the uncertainty properly and thus make strategic choice and decision, experienced and old members of the family set or tried to set the strategies and they didn't use expert support adequately. Furthermore, the difference between the results of this study and those of other studies may be arising due to the different working cultures and strategy cultures among different countries. This might cause the average companies in different countries to take different decisions or act differently in similar situations. For this reason, it might be helpful for the companies in Turkey to work on their strategies more effectively. They might benefit from the expert support with respect to management and strategic analysis. The companies are expected to choose the competitive and supply chain strategies that will contribute positively to their financial performance depending on their uncertainty perceptions for the future (low vs. high) thanks to this study. Furthermore, the IT companies that develop computer software for supply chain applications are expected to design the software based on the findings of this study.

FURTHER STUDIES

Future studies may explore larger populations following this study. For example, ISO 1000 or ISO 500 companies identified annually by Istanbul Chamber of Industry can be chosen as a population. Unlike this study, if future studies use financial and non-financial performance criteria in addition to the perceived financial performance measured to assess the firm

performance, this may provide a different perspective. Given that there are also other variables which are excluded from the scale and which might influence the results of the study, standardization of the research population, for example studying companies in a single sector or with certain size may provide different perspectives. In future studies, world can be taken as the population and certain number of countries and firms in different continents can be sampled for the findings of this study to be significant and to identify the differences between countries. In this way, the most general conclusions can be derived.

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