

Effects of Strategic and Productivity Flexibility and Agility Supply Chain on Company's Performance in the Automobile Industry

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Abstract

Responsiveness to customers and markets is a prerequisite for all organizations, especially the luxury automobile industry. This paper is intended to evaluate this issue and focus on it from the resource-centric viewpoint as a channel for investigating the incidents and major consequences of agile supply chain performance at strategic and operational levels. According to the literature review, we believe that the two factors of organizational flexibility-strategic flexibility and management flexibility-are considered two basic antecedents of agile supply chain performance. In addition, agile supply chain performance, strategic flexibility and productivity flexibility are key factors in organizational performance. The conceptual framework for the topics was tested and proposed through the empirical study of the industrial activities selected. Data from a sample of 200 managers and employees of the automobile industry were analyzed by structural equation modeling. The results showed that strategic flexibility and productivity flexibility both have a positive effect on agile supply chain performance. By the way, strategic flexibility has a direct and significant effect on company's performance, while productivity flexibility is not in this way. In addition, agile supply chain performance plays an important role in intermediating the effects of strategic and productivity flexibility on company's performance. The findings of the present study improves the understanding of supply chain management that focuses on agile supply chain performance in the luxury automobile industry.

Keywords: supply chain management, agile supply chain performance, strategic flexibility, productivity flexibility, luxury automobile industry

Introduction

Items of a consumer's products are unique described by short life cycle, high demand instability and low sales predictability and instant purchases (Bruce, Daly and Towers, 2004; Christopher, Lowson & Peck, 2004; Moon & Ngai, 2010). Luxury automobiles are designed to evaluate the momentarily transient state. Therefore, it can be sold for short periods of a few months or a few weeks (Christopher & Peck, 1997). Also, the demand for these products is very unstable and influenced by factors such as weather, latest videos, special events and the selection of famous people. In addition, the automobile industry is macro, sectional, global and influenced by numerous political, economic, financial and social issues. In this context, industrial players should play an active role in balancing supply and demand.

Unique characteristics of products of the luxury automobile industry create major challenges for all industrial experts seeking to generate value and increase meeting market's demands that requires complex operations along with the entire supply chain (Christopher et al., 2004). In particular, luxury

automobile dealers at the borderline of the market face the greatest difficulty in choosing the right product and quantity to evaluate the needs of their customers and their desire for a new season. The solution to this is not to make purchasing decisions in the last moment in order to secure the "evaluation" of the market and deliver the best product to meet the unstable needs of the market. Retailers are always faced with the increasing flow of followers that should be able to be referred to meet their needs. In this dynamic environment, managers must provide smart strategies of supply chain that focus on agile supply chain performance (Lee, 2004). Failure to adapt to these conditions will be as an annihilation in the industry.

Agile supply chain performance is a major factor in the current competitive market (Goldman, Nagel, and Preiss, 1995). As the agile supply chain performance enables its member companies to become more sensitive to the market, to be able to more easily adapt supply to demand and better achieve shorter cycles and periods (Christopher, 2000). Sharp, Irani and Desai (1999) define agile supply chain performance as the ability of supply chain to respond quickly to market changes and Ismail and Sharifi (2006) define it as the capability of supply chain and its members for readapting the network and its operations to meet the customer's dynamic needs. Many researchers agree that flexibility is an important factor affecting the company's agile performance and affects overall performance (Agarwal, Shankar, and Tiwari, 2006b., Barney, 1991, Gong, 2008, Lee, Liu, Devon, and Lee, 2008). , Sanchez, 1995). We argue with the view that agile supply chain performance and organizational flexibility are interrelated (Sanchez, 1995; Zang, Wondermobers and Limm, 2003), and the fact that organizational flexibility is one of the most important factors in achieving agile performance in the superior supply chain. The good causal relationship has been confirmed. However, most studies study the benefits and the gap in empirical studies on the role of agile supply chain performance and its relation to antecedents and consequences.

The purpose of this paper is to limit this gap by examining the attitudes of manufacturers of luxury automobiles in the emerging market of Asia, which are mass-produced in China and other countries in the region. For two reasons, we chose these responsible companies: 1. Manufacturers in the industry seek to compete in a competitive market. 2. Companies in this emerging market are faced with increasing probabilities, including government policies, exchange rate fluctuations and increasing operational expenses. All of these issues are likely to make companies look forward to their agile performance in order to enhance their competitive advantage. Instead of incorporating all antecedents for flexibility of supply chain, in this study, we focus on two types of strategic and productivity flexibility - in terms of how they relate to the automobile industry. We study the effect of these two flexibility factors on agile supply chain performance, so, in following, we evaluate how agile supply chain performance affects the relationships between these flexibility factors and company's performance.

The resource-centric attitude in the literature describes how companies can achieve stable and unique competitive advantages and generate and control resources and thereby produce superior long-term performance (Barney, 1991, 2001). According to this view, company's performance can be considered as a function of the resource composition. Competitive advantages can be obtained when the company's resources are heterogeneous, unique and difficult to imitate, or when the company creates more value for customers (Ansoff, 1965; DeCastro and Chrisman, 1995). In particular, resources must be valuable, scarce, inimitable and irreplaceable (Barney, 1991, Piteroff, 1993). These features (often known as the VRIN framework) represent the potential performance and outcomes of resources. This means that the better the company can differentiate itself and use its valuable, scarce, irreplaceable and inimitable resources, the opportunity to achieve superior performance is greater. Given these capabilities, the idea of a new research was formed and made foundations for establishing the research hypotheses.

According to the resource-based attitude, we will propose our research framework to conceptualize the relationship between research structures, strategic flexibility, productivity flexibility, supply chain agility and company's performance. Through structural equation modeling, the causal relationships among these structures are tested statistically with the data obtained through industrial surveys. According to the findings, the recommendations of managers to improve their supply chain strategy and theoretical effectiveness and industrial concepts are put forward.

The rest of this paper is organized into four sections according to the following: The second section of the literature presents four research structures and a conceptual framework and seven hypotheses to examine the relationships of all the research structures. Section 3 discusses the research methodology

used to conduct a survey. Section 4 analyzes the data collected to test seven hypotheses and validate the overall model. Section 5 concludes the paper and discusses future potential research on the subject.

1.1 Theoretical background

In this section, the antecedents and consequences of the supply chain are determined. The research framework that connects major research structures is conceptualized. This framework is used as the basis for the next empirical study.

1.1.1 Agile Supply Chain Performance

Agility and performance are a general concept including customer agility (Sambamerti, Baravadaige, and Grower, 2003), agile performance in operation (Amit and Zott, 2001), partnership agility (Sambamerti et al., 2003), corporate agility (Orbi, Baravadaige and Sambamerti, 2006), organizational agility (Goldman et al., 1995) and agile supply chain performance (Agarwal et al., 2006b). This paper focuses exclusively on the agility of supply chain, since a fundamental capability for manufacturer of the automobile industry is having a unique nature in the industry in which interdependence among supply chain members is significant.

There are countless definitions of agile supply chain performance. At first, the Lacqua Institute used the term "agility" in business, believing that organizations would flourish in an environment of fast and unpredictable changes while acting agilely (Nagel and Dove, 1991). Goldman et al. (1995) considered the agility to be an advantage in delivering value to customers, so that, to face challenges with readiness, to valorize people's knowledge and skills and form virtual partnerships. Safford, Goosh and Merti (2008) argue that the degree of agile supply chain performance of a company reflects the power of interaction between the company and its markets. In this paper, we follow the concept of Braunscheidel and Suresh (2009), who defined the agile supply chain performance as a company's internal and external capabilities, consistent with its major suppliers and customers, to timely respond to market developments as well as potential and actual disorders.

Agile supply chain performance can be achieved through co-operation among different forms of flexibility across all sides in the supply chain (Agarwal, Shanker and Mandal, 2006a), hence giving each member firm the authority is to effectively respond to position of unstable and changing market. Safford, Goosh and Merti (2006) consider agile supply chain performance as an ability and capability instead of qualification because of the fact that agility in the supply chain represents the consequence or concept of external focus, which involves reducing the production time, increasing the introduction of a new product and an improved level of customer services. However, the issue of how these measurements are effective and achievable remains unanswered.

1.1.2 Major Antecedents of Agile Supply Chain Performance

Agile supply chain performance depends on many components related to company's performance. These components include deferral, delivery speed, centralized and collaborative planning, managed items list, agile response strategy, data accuracy, reduction in lead time, cost minimization, integration of IT and IT and organizational flexibility.

Ried and Blanzan (1998) consider organizational flexibility as an organization's capacity to regulate its internal structures in response to environmental changes. In other words, organizational flexibility determines what work is done within the company, how it is done within the company, and therefore it is considered as the most important antecedent of agile supply chain performance in the luxury automobile industry. In this regard, this organizational flexibility includes the strategic use of corporate resources and tactical management of productive operations, which are called strategic flexibility and productivity flexibility, respectively.

Strategic Flexibility: is the ability of a company to regulate strategic decisions in response to internal and external developments. (Aaker and Mascarenhas, 1984; Mathesons, Paules and Wandbomta, 2005; Price, Beach, Mannelman and Sharp, 1998). It also involves creating the ability to respond to changing market conditions, which is as investing in different resources and processing a wide range of strategic options (Bowman & Harry, 1993). Firms with strategic flexibility have a set of flexible resources and a variety of strategic options that allow them to apply "surprise management" (Ansoff, 1980). Certainly, strategic flexibility enables companies to respond to market opportunities and emerging technologies instantly.

Sanchez (1995), with his resource-based attitude, believes that strategic flexibility is faced with company resources and operating mode is faced with limitation. Because resources have an important role in company resources, along with the services they provide for business operations. Sanchez (1997) later classified the strategic flexibility into flexibility of resources and flexibility of

coordination, explaining that the previous one originally described the arrangement of available resources for the company, while the latter refers to the options for establishing these resources. Therefore, the flexibility of resources is derived from the inherent characteristics of resources, while the flexibility of the coordination is feedback of the company's ability to use existing resources (Grewal & Tansuhaj, 2001)

Productivity flexibility: It is defined as "the ability of the production system to overcome the changing conditions in the environment" (Gupta and Goyal, 1989, p. 120). This issue also relates to the short-term operational level of flexibility related to daily function (Stee and Stee, 1990, Suarez, Gasmmuno, and Fine, 1995). According to Apton (1994), the flexibility of production determines the ability of a company to organize its production processes in order to produce different types of products in response to unexpected developments in the business and trade environment, and the losses of time, effort, cost, or performance are minimized. In productivity flexibility, the company can reconfigure its production resources effectively (Boyle, 2006) to produce various products efficiently in order to provide and increase the accessibility and availability of its own warehouse. The ultimate goal of productivity flexibility is to reduce production time, reduce production costs and expand the range of products in existing resources.

Slack (1987) considers the productivity flexibility as a two-dimensional structure consisting of range flexibility and response flexibility. The concept of range flexibility is the ultimate and overall cover of capability or range of states that the production system is able to access, while response flexibility is "convenience (in terms of cost, time, or both) in addressing changes within the cover and framework of capability". Lee and Ogonmakan (2008) define the flexibility of the company's range as "the ability to provide a mix of diverse products in response to changes in market demand and their fluctuations by reaching suppliers timely and rescheduling the production order". Therefore, they also define the flexibility of the company's response as "the ability to provide a quick response to changes in delivery requests by tracking inventory and sale items, assuming that they reduce costs and accelerate framework movements" (740 2). Therefore, this type of range flexibility is a static aspect measured over a long period of time that has components of cost and time, while response flexibility is a dynamic aspect including changing from one state to another measured in a short period without significant changes in cost (De Toni and Tonchia, 1998).

1.1.3 Company's Performance

The company's performance demonstrates how an organization effectively runs its business and manages it. It is a major component used to assess the success or survival probability of an organization. Organizational performance is a related structure, which is considered as the final outcome of business model in the field of business studies (Romelt, Scandal and Tis, 1994) (Richard, Deviney, Yip and Johnson, 2009). In this study, we consider company's performance as the major consequence of agile supply chain performance. In practice, company's performance can be measured in a number of ways. The financial performance is the most common measurement (Huang, Ou, Chen, Lin, 2006; Nadkrani & Narayanan, 2007; Ray, Pattinahan & Set, 2006). But it is a limiting indication of organizational performance (Santos & Brito, 2012). According to Ray, Patnayacaani & Set (2006) we examine the superiority of company's performance, income growth and customer relationships, only rather than measuring financial performance. This comprehensive understanding of company's performance allows for a more general and balanced view and eliminates the reliance on vulnerable assessments against manipulation or lack of diverse aspects of actual business operations. Details of operational superiority of company, income growth and customer relationship are described in Section 3-1.

1.2 Hypotheses

Along with the resource-based attitude, we propose seven hypotheses to examine the intermediate relationships between agile supply chain performance with two antecedents and one consequence, and examine the effects of the two factors of flexibility (antecedent) on company's performance (consequence).

1.2.1 Relationships among strategic flexibility, productivity flexibility and agile supply chain performance

Company can achieve competitive advantage in a dynamic environment by developing flexibility in terms of replacement process and functional approach in risk management and probabilities - a general approach to risk management and probabilities (Sanchez, 1993). Markets of changing agile luxury automobile product (like the fashion market) require high competition and consideration of

probabilities and practice in an unstable environment (Moon, Mo and Chan, 2014). According to Lao (1996), strategic flexibility improves the capability of company to respond to this market environment by setting goals and supporting knowledge and capability. Sanchez (1995) believed that strategic flexibility included flexibility of resources and flexibility of coordination, which is more than antecedent of operational level for agility. When the flexibility of resources is steadily high, companies can assure that they have achieved the market leadership advantage and can integrate internal and external resources. In addition, companies can integrate, create and reconfigure internal and external resources through the flexibility of coordination, and thus reduce the cost, time and effort involved in changing the composition and use of resources (Sanchez, 1997). On the other hand, the concept of "agile performance" refers to the agility of company's performance in synchronization with various business operations. Through improvements in flexibility of resources and flexibility of coordination, company can achieve a degree of agility that enables it to carry out strategic establishment efficiently and effectively (Lee, Chang, Goldsby and Halsapel, 2008). From this point of view, we propose the first hypothesis as follows:

Hypothesis 1: Strategic flexibility has a positive effect on agile supply chain performance.

Productivity flexibility is also considered as a major organizational flexibility at the operational level: it is capability and ability of a company to reconfigure its productivity resources to produce diverse products and to overcome market uncertainties and maintain a high level of performance (Gerwin, 1993; Slack, 2005). This kind of flexibility is mainly the qualification to meet the needs and satisfy customers' expectations without excess costs, excess time, disruption to the organization, and loss of performance (Zang et al., 2003). Company can use its own productivity flexibility (ie, range flexibility and response flexibility) to take advantage of various production options, which are needed because of reduction in cost and time (Slack, 1978). A more important point is that the higher degrees of productivity flexibility enables company to reduce and regulate the time interval between planning and execution, and thereby to increase its ability to improvement (Johnson, Lee, Sanin and Groupman, 2003). Therefore, companies can improve the agile supply chain performance by increasing the speed of synchronization with the business entity. We believe that productivity flexibility is one of the key factors in producing agile supply chain performance. The following hypothesis is taken from this point:

Hypothesis 2: Productivity flexibility has a positive effect on agile supply chain performance.

1.2.2 Relationships among strategic flexibility, productivity flexibility and agile supply chain performance

Strategic flexibility is often expected to improve the efficiency of communications, planning and strategies, and improve the market aspects, product delivery and company's performance (Miles and Snow, 1978). The two components of strategic flexibility- flexibility of resources and flexibility of coordination- are function of resources and the ability to use resources. Strategic flexibility affects the mode of creating competitive advantages of company in the external environment in response to changes. In addition, as Casthoiko and Heath (2004) argue that strategic flexibility demonstrates the capability of company to use existing resources. This means recognizing when the time reverses or stops commitment to resources and responds quickly to diverse market developments. In this context, strategic flexibility is an important factor in the success of the manufacturing company in the unstable market position. We therefore propose the following hypothesis.

Hypothesis 3: Strategic flexibility has a positive effect on company's performance.

From another hand, productivity flexibility can be considered as company's capacity in taking and advancing new actions during the production process in order to meet needs and continue the production process effectively, despite the changes in the business environment (Apton, 1994). If the alignment with external variables (such as the competitive environment, strategy, organizational attitudes, and technology) is taken into account, then the manufacturer can achieve competitive advantage and these capabilities. Productivity flexibility is often an important factor in promoting the positive effect of the manufacturer and fulfilling client orders successfully (Javier, Leopoldo, Antonia, 2014; Zang et al., 2003). It also has an empirical direct effect on the various performance consequences, including the production cost (Cracker and Searyni Vassen, 1990; Narasiman & Das, 1999); sales boom (Swamidas & Neville, 1986) and financial profitability (Vickery, Drag and Marckland, 1997) Therefore, productivity flexibility is widely considered as a way to improve company's performance (Wercka and Alri-Kelly, 2000). We therefore propose the following hypothesis:

Hypothesis 4: Productivity flexibility has a positive effect on company's performance.

1.2.3 Relationship between agile supply chain performance and company's performance

As discussed above, agile supply chain performance is defined as a company's capability, both internally and externally, to adapt and respond to market changes, and thus affects the agility of the fast supply chain (Braunscheidel & Suresh, 2009). Over the past few decades, we have witnessed intensification of global competition, unstable market position, fundamental and vulnerable changes in customer demand and disordered environment in many industries, in particular the automobile industry (Moon et al., 2014). In response to these challenges, companies need to keep their options open whenever possible and expand their ability consciously to provide superior value, management of risk disruption and ensure uninterrupted customer services in an agile manner to ultimately improve their overall performance (Chopra and Sodhi, 2004; Grystwofr, 2000; Christopher and Towill, 2001; Safford et al., 2006; Youssef; Ganssaren; Adele; and Siwyaggonathan, 2004; Zang; Wondermobers & Limm, 2002). In fact, achieving the competitive advantage is the basis of company's success confronting with extreme competition and high probability. We therefore propose the following hypothesis.

Hypothesis 5: Agile supply chain performance has a positive effect on company's performance.

1.2.4 Role of agile supply chain performance in intermediating effects of strategic flexibility and productivity flexibility on company's performance

Agile supply chain performance is usually divided into two components of sense and response (Orbi et al., 2006). Sensitive capability refers to company's ability to sense the environmental changes and the ability to respond refers to its ability to respond to these fluctuations. Dove (2001) linked the response component to the ability of responsiveness and defined it as the physical ability to act; he also attributed the sense component to "knowledge management" -the mental ability to determine the situations that need to be addressed. An agile company is aware of the changes in its business environment and the awareness of fluctuations affecting the business environment and the effects of these changes on their operations. More importantly, an agile company can implement the necessary improvements and change its current configuration to adapt to the new business environment in a timely manner. Agile supply chain response, in addition to evaluating the convergence of strategic and productivity flexibility across all sides within the supply chain, can enable the companies to effectively respond to high potential position.

Strategic flexibility is determined by a range of resources and the ability to utilize resources and the ability to establish these resources. The overall effect of these intrinsic qualifications on company's performance can be achieved by utilizing these qualifications in response to market threats and market opportunities timely (Grewal and Tansuhaj, 2001). Sensitive nature and agile supply chain response can enable the company to expand its strategic flexibility to take strategic and operational actions in order to achieve its goals. From this point of view, we believe that considering agility of supply chain, with better description of the effects, strategic flexibility affects company's performance. We therefore propose the following hypothesis:

Hypothesis A: agile supply chain performance intermediates effect of strategic flexibility on company's performance.

As we have already said, productivity flexibility refers to company's capacity to adapt to various configurations within its own production capability and to move quickly between production systems from one to another (Boyle, 2006). Similar to strategic flexibility, incorporating agile supply chain performance can better explain the overall effect of productivity flexibility on company's performance. This means that the overall effect of productivity flexibility on company's performance cannot be fully achieved unless the company can sense changes in the market through agile supply chain performance. Therefore, we believe that agile supply chain performance plays a major role in intermediating the overall effect of productivity flexibility on company's performance.

Hypothesis B: Agile supply chain performance plays role in effect of productivity flexibility on performance's company.

1.3 Overall conceptual model

By adopting the resource-based attitude to agile supply chain performance, companies can differentiate themselves from competitors by positioning distinct major competencies of VRIN capabilities to respond to market fluctuations in a timely manner (Barney 1991; Wornloflet, 1984). According to Braunscheidel and Suresh (2004), agile supply chain performance is focused on this capability as output, which is derived from the flexibility that makes the supply chain respond to

market developments agilely. Christopher (2009) also believed that agile supply chain was sensitive to the market, in other words, it could feel the actual demand and respond to it and thus improve company's overall performance.

Figure 1 schematically describes the overall conceptual model in this paper and also considers the relationships among the four major structures: strategic flexibility, productivity flexibility, agile supply chain performance and company's performance. In addition, strategic and productivity flexibility is considered as a second-order model, rather than a first-order model, since strategic

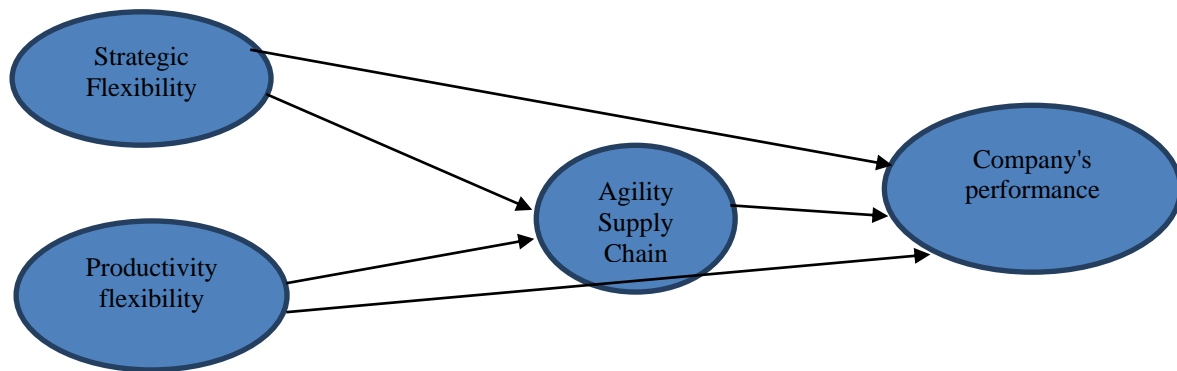


Figure 1. Investigation model for flexibilities and agile supply chain performance on company's performance

Method

This research is a quantitative research and applied in terms of goal. Also it is a descriptive-correlational research in terms of method. Statistical population of the research includes 420 managers and employees of the automobile industry. 200 people were considered as sample to determine the sample size (Cochran formula). The sampling method is simple stratified random. The initial questionnaire of the research was prepared according to the literature and previous studies. Validity and reliability of all of them were tested. In this research, content validity and factor validity of the questions were evaluated. Opinions of elites and experts in this field were used for content validity of the research. Also, the validity related to each one of the structures was obtained using the confirmatory factor analysis. Cronbach's alpha method was used to evaluate reliability of the tools. The results in Table 1 show that all dimensions have acceptable reliability (higher than 0.7).

Table 1. Cronbach's alpha of variables

Variables	Cronbach's alpha coefficient
Strategic flexibility	85%
Productivity flexibility	78%
Agility of supply chain	90%
Company's performance	86%
Total questionnaire	90%

2.1 Discriminant Validity

In the part of discriminant validity, the difference between indicators of a structure and indicators of other structures in the model are compared. This is calculated through comparing square root of AVE of each structure to values of correlation coefficients between the structures. To do this, a matrix must be formed in which values of the main diagonal are root square of AVE coefficients in each structure and low values of the main diagonal are correlation coefficients between the structures.

Table 2. Comparing root square of AVE and correlation coefficients of the structures

	Strategic flexibility	Productivity flexibility	Agility of supply chain	Company's performance

Strategic flexibility	0.865			
Productivity flexibility	0.474	0.833		
Agility of supply chain	0.375	0.508	0.836	
Company's performance	0.337	0.387	0.342	0.756

As it is clear in the matrix, root square of AVE in each structure has been obtained higher than correlation coefficients of that structure with other structures which indicates the acceptability of discriminant validity of the structures.

Findings

First, data are analyzed using the technique of structured equations and Amos software. Considering the limitation in the research's size, we did not provide the models to measure the variables and only the structural model of the hypotheses are provided.

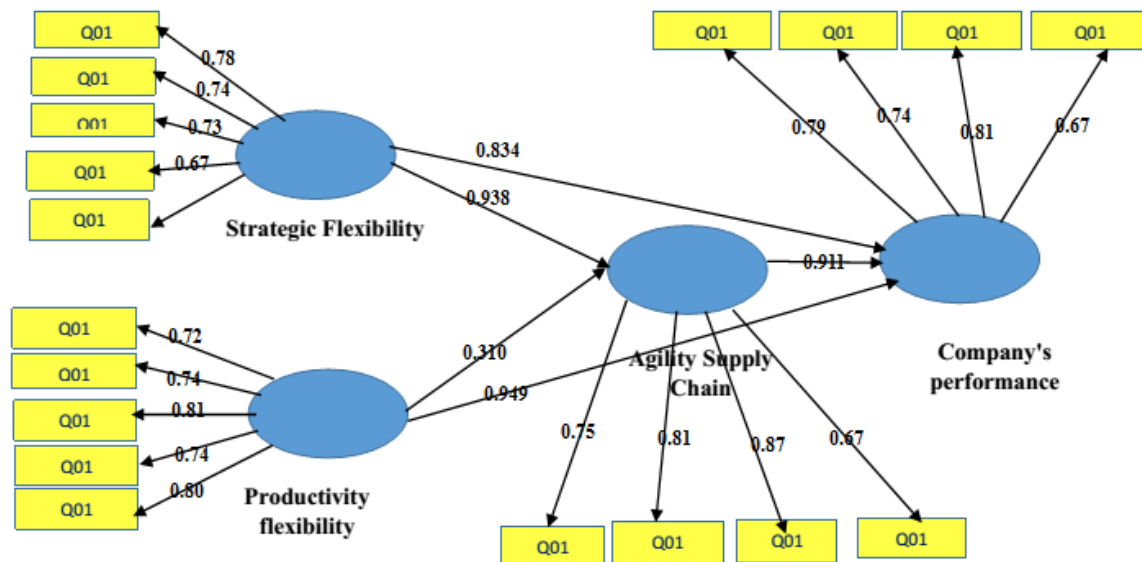


Figure2.

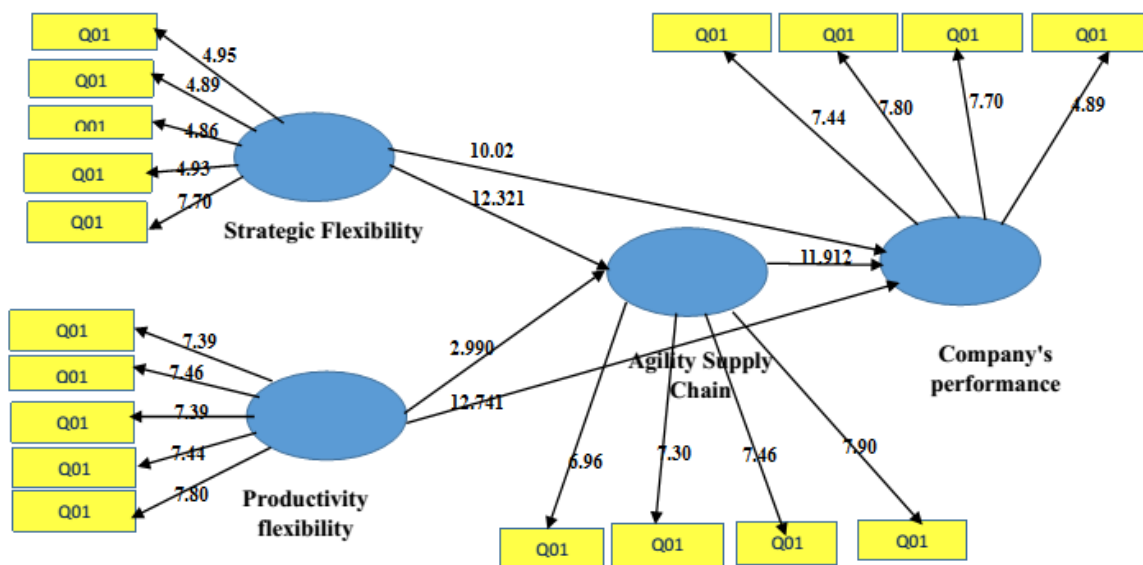


Figure 3.

Amos software carries out all calculation related to analysis of direct and secondary paths and provides them in a table named overall effects. As a result, the value of relationship and significance of all variables can be observed as well. Results of the calculation are provided in the following table.

Table 3.

t-statistic	Relationship	Hypotheses
10.02	0.834	Strategic flexibility has a positive effect on agile supply chain performance.
12.321	0.938	Strategic flexibility has a positive effect on company's performance.
2.990	0.310	Productivity flexibility has a positive effect on agile supply chain performance.
12.741	0.949	Productivity flexibility has a positive effect on company's performance.
11.912	0.911	Agile supply chain performance a positive effect on company's performance.

3.1 Evaluation of model fit

After modeling and estimating its parameters the first question is that is the measurement model appropriate or not. This questions can be answered only through evaluation of the fit. The purpose of model fit is that how far a model is compatible with the relevant data (Kalantari, 2009, p. 127).

When a model is precisely characterized and has similar characteristics, and its estimation and testing is feasible, then there are many indicators for evaluating its fit, the most important of which is given in the following table:

Table 4. Indicators of goodness of fit for the model

Fit indicator	Acceptance criterion	Statistic of model of hypotheses
RMSEA ¹	RMSEA<0.08	0.073
NFI ²	NFI>0.90	0.94

¹Root Mean Squarererror of Approximation

²Normed Fit Index

NNFI	NNFI>0.90	0.90
IFI	IFI>0.90	0.92
CFI ³	CFI>0.95	0.98
GFI ⁴	GFI>0.90	0.93
AGFI ⁵	AGFI>0.85	0.88
RMR	RMR<0.05	0.058

The most commonly reported indicators for most researches are listed in the table above. If one of these indicators is not acceptable, it is not a rejection of the model, but rather a relative weakness of the model, which may be a result from sampling, sample population or other factors. The presented indicators and comparison with the optimal value for a fitted model show the good fitting of the research model. A remarkable point in fitting the model is that, while fitting the structural model confirms that model, it does not always prove that the model is the only model valid.

Discussion and conclusions

Making a business in this emerging market faces challenges. There are many risks and probabilities-economically, politically, legally, socially, culturally, and environmentally - as compared to traditional markets (Moon et al., 2014). For example, China's new environmental and labor policies, and China's recent tensions with the United States have left many companies in the industry. Though challenging, Different stack members of the entire supply chain are located in different countries. In general, this situation have led to very complicated structure of supply chain. Companies need to invent and implement supply chain strategies rationally for effective management, in particular with regard to agile supply chain performance and organizational flexibility.

4.1 Summary and Discussion

Results of this paper show strategic flexibility and productivity flexibility have a positive effect on agile supply chain performance. Further examination of the weights associated with the indicators of these two latent variables shows that both of them are essential components. However, flexibility of resources is more important than flexibility of coordination for strategic flexibility, which shows that investing in diverse resources affects product development, sales, and marketing. On the other hand, both the range flexibility and the response flexibility are important for the productivity flexibility, so that the previous one is slightly critical to achieve a flexible production system.

The results support the concept that agile supply chain performance plays a constructive role in enhancing company's performance, and both strategic flexibility and productivity flexibility are critical factors that help companies adapt themselves to changing agile environments of global fashion business. This is especially true when the two factors of flexibility operate through agile supply chain performance. According to the data analysis, all the relationships mentioned, with the exception of Hypothesis 4 (ie, the relationship between productivity flexibility and company's performance), were statistically significant. This means that strategic flexibility and productivity flexibility have positive and major effects on agile supply chain performance. In short, agile supply chain performance affects company's performance and the direct effect of strategic flexibility on company's performance is mainly significant, while the productivity flexibility is not in this way.

As expected, agile supply chain performance plays an important role in intermediating the effects of two factors of flexibility on company's performance. The results of the data analysis indicate that agile supply chain performance has relatively an intermediary effect on the relationship between strategic flexibility and company's performance, which means that strategic flexibility has a direct effect on company's performance. On the other hand, agile supply chain performance has fully an intermediary effect on the relationship between productivity flexibility and company's performance. Therefore, the effect of productivity flexibility on company's performance is fully realized through agile supply chain performance. This finding is inconsistent with previous findings, like Vakura and Ulri-Kelly (2000)

³Comparative Fit Index

⁴Goodness of Fit Index

⁵Adjusted Goodness of Fit Index

who have stated that incorporation of productivity flexibility can enable the company to successfully respond to changes in the market position and directly promote business competition. The results of the current paper indicate that productivity flexibility does not have a direct effect on the company's performance; instead it has a positive effect on the company's performance, only when intermediating with agile supply chain performance.

This result contradicts the intuition of feedback from recent changes in the global luxury automobile industry. In the past, demand was more than supply and the buyers of advanced economies only would source major products of suppliers in Asian countries. The success of automobile manufacturer in this area often depends on its production capacity. Therefore, productivity flexibility had a major effect on company's performance. However, this situation does not exist today as the industry faces more demand market for low cost, high-speed production and high quality. More importantly, buyers of automobiles are not only demanding a wide range of common products, but at the very last moment they make their order and permanently change design details or color / size combinations. Automobile manufacturers need to develop agile supply chain performance in order to achieve separation in productivity flexibility and be able to feel and respond promptly and strategically to the challenges posed by this unstable business environment.

4.2 Industrial Concepts

Agile supply chain performance, by supporting strategic flexibility and productivity flexibility, enhances the company's ability to respond to market needs instantly. Productivity flexibility is easily understood and less subtle than strategic flexibility or agile supply chain performance, and its production benefits are diverse. As a result, manufacturers often invest in promoting their productivity flexibility by updating their machines, labor and controlling material (Javier et al., 2014; Zang et al., 2003), hoping to make their companies enable to respond by timely product modification and commercialization of new product. Strategic flexibility is often overlooked, however it is a major antecedent for agile supply chain performance and company's performance.

In terms of application, a great benefit can be gained if companies establish strategic flexibility to customize their scarce resources in a flexible way. In this way, companies can reduce cost, time and effort involved in changing the composition and use of resources, and lead to agile supply chain performance efficiently (Sanchez, 1997). Companies need to be able to improve productivity flexibility and strategic flexibility, as well as the relationship between these two qualifications, so agile supply chain performance to be effective. This strategy is not just resource-based. Understanding the ways to promote these resources is crucial to success, especially for companies that produce in more than one factory and their customers are in more than one market place. Because making business in this complex and unstable environment requires a large amount of strategic planning to coordinate and balance the activities of the entire supply chain.

4.3 Theoretical Effects

The results of this paper provide three major theoretical effects for a better understanding of supply chain management, which emphasize the agile performance of supply chain. First, we developed a conceptual framework from the point of view of resource-based, which includes organizational flexibility (at both strategic and operational levels) as an antecedent to agile supply chain performance and company's performance. This framework can help companies identify the major capabilities needed to compete in the business environment. The findings of the study enrich the literature itself by providing a deep understanding of the nature of strategic flexibility and productivity flexibility, as well as the relationship between them, with agile supply chain performance and company's performance. Most importantly, as far as we know, this paper is the first to use agile supply chain performance as an intermediary agent to test the effects of various flexibility factors on company's performance in the automobile industry, which is one of the largest and most complex manufacturing industry in the world.

Second, this paper (through the use of SSM) focuses on the causal relationships between strategic flexibility, productivity flexibility, agile supply chain performance and company's performance. Flexibility is a well-defined and evaluated concept related to agile performance. However, a few empirical studies have been conducted to confirm the importance of these relationships. In examining this aspect, the present study has advanced the understanding of the statistical operations of the relationships between these major structures. In addition to studies that have used agile supply chain performance as a valuable tool, competition with other aspects of the supply chain, the theoretical formation of this study emphasizes major issues that can help companies to achieve the flexibility of

supply chain. In particular, empirical findings provide a different perspective on the direct effect of productivity flexibility on company's performance. Experts in the automobile industry can point to the findings of this study when they strategically manage their resources and overcome the challenges of the global market.

Third, this paper presents the findings of Safford et al. (2006), who examined agile supply chain performance at the operational level to expand the concept at a strategic and operational level. In addition, while their effect is focused on the relationship between flexibility of supply chain and agile supply chain performance, this paper includes company's performance as a dependent variable within the research framework. This paper, in establishing the relationship between organizational flexibility and agile performance of the production chain, hopes to encourage executives to implement the appropriate and active stages strategically rather than merely evaluating the resource flexibility. Managers should be able to determine the ways to create agile supply chain performance at a powerful level of resource-based attitude in order to achieve a secure and stable competition.

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