

THE MEDIATING IMPACT OF INNOVATION ON THE RELATIONSHIP OF SUPPLY  
CHAIN QUALITY MANAGEMENT AND PERFORMANCE IN THE IRANIAN  
AUTOMOTIVE INDUSTRY

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UNIVERSITI TEKNOLOGI MALAYSIA

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A thesis submitted in fulfilment of the  
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**DEDICATION**

By the grace of almighty Allah (swt)

To my beloved mother and father

## ACKNOWLEDGEMENT

I would like to express my immense gratitude and thanks to Almighty Allah s.w.t who bestowed upon me this opportunity to pursue and succeed in the completion of my PhD study. This achievement could not have been possible without the support from various individuals. First and foremost, I wish to thank my pillars of strength, my loving parents Gholamreza Nosratpour and Mahnaz Iraji who dream and pray the best for me. Second, I extend my sincere and deepest thanks to my supervisor, Prof. Dr. ABU BAKAR A. HAMID, for his valuable guidance, support and encouragement. I have profound appreciation for the considerable time and effort invested by him by reviewing and commenting on the drafts of this thesis.

Third, my sincere thanks to UTM management and colleagues who positively drove me towards achieving this completion. Fourth, I would like to acknowledge the constructive criticisms and suggestions by the examiners of my proposal defense that helped in strengthening the output of my thesis. Fifth, there were a number of people who assisted me in data collection without which this thesis would not be possible. Last, this thesis is dedicated to my dear family members who kept me mentally strong throughout this journey.

## ABSTRACT

In today's global market place, the traditional approaches to supply chain management (SCM) increasingly proved to be ineffective. Though many researches have been focused on supply chain management concept, its link with quality management perspective is often limited, and more focus is needed to evaluate quality management (QM) issues within the supply chain contexts. Consequently, this study incorporates and defines the concept of supply chain quality management (SCQM) and its practices by comprehensively reviewing prior QM and SCM literature in major journals. The main goal of this study is to examine the relationships between SCQM practices, performance and innovation. A conceptual model was developed and tested through path analysis using the cross-sectional data collected from the automotive industry in Iran. Using a quantitative methodology, 280 of 500 senior and executive managers in Iran automotive industry participated in this study. Structural equation modeling (SEM) was employed to examine the research model. Findings revealed that there is a positive effect of the supply chain quality management practices on innovation and organizational performance. In addition, the results also suggest that innovation partially mediates the relationship between supply chain quality management practices and organizational performance. This study makes several theoretical and empirical contributions and provides further insights on SCQM practices. Managerial implications are discussed, as well as several potential recommendations for future studies are identified and a conclusion is drawn. The outcomes of this research would enable managers to assess the strengths and weaknesses of their organizations and thus, develop appropriate strategies to improve their organizational performance.

## ABSTRAK

Dalam pasaran global masa kini, pendekatan tradisional pengurusan rantai bekalan (SCM) semakin dibuktikan tidak lagi efektif. Walaupun banyak kajian tertumpu kepada konsep pengurusan rantai bekalan tetapi hubungannya dengan perspektif pengurusan kualiti adalah biasanya terhad dan fokus yang lebih diperlukan untuk menilai isu pengurusan kualiti (QM) dalam konteks rantai bekalan. Oleh yang demikian, kajian ini menggabungkan dan mentakrifkan konsep pengurusan kualiti rantai bekalan (SCQM) dan amalannya dengan mengkaji secara menyeluruh literatur QM dan SCM terdahulu dalam jurnal utama. Matlamat utama kajian ini adalah untuk melihat hubungan antara amalan SCQM, prestasi dan inovasi. Sebuah model konsep telah dibangunkan dan diuji melalui analisis lintasan menggunakan data keratan rentas yang dikumpul daripada industri automotif di Iran. Dengan menggunakan kaedah kuantitatif, 280 daripada 500 pengurus kanan dan eksekutif dalam industri automotif di Iran telah mengambil bahagian dalam kajian ini. Persamaan permodelan struktur (SEM) telah digunakan untuk mengkaji model kajian. Hasil kajian menunjukkan terdapat kesan positif amalan pengurusan rantai kualiti bekalan ke atas inovasi dan prestasi organisasi. Disamping itu, hasil kajian mencadangkan bahawa inovasi mengantara secara separa hubungan di antara amalan pengurusan rantai kualiti bekalan dengan prestasi organisasi. Kajian ini memberi beberapa sumbangan teori dan empirik dan memberi pandangan tambahan amalan SCQM. Implikasi pengurusan dibincangkan, termasuk beberapa cadangan berpotensi bagi kajian masa hadapan telah dikenalpasti dan kesimpulan kajian telah dikemukakan. Hasil kajian ini dapat membantu para pengurus dalam mengakses kekuatan dan kelemahan organisasi mereka dan seterusnya membangunkan strategi untuk membaiki prestasi organisasi mereka.

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## LIST OF ABBREVIATIONS

OP	-	Organizational Performance
INN	-	Innovation
QM	-	Quality Management
SCM	-	Supply Chain Management
TML	-	Top Management Leadership
EARR	-	Employee Appraisal, Rewards, And Recognition
SR	-	Social Responsibility
CI	-	Continuous Improvement
SCQM	-	Supply Chain Quality Management
SP	-	Strategic Planning
SSP	-	Strategic Supplier Partnership
CFS	-	Customer Focus and Satisfaction
ILP	-	Internal Lean Practices
IA	-	Information Analysis
B	-	Benchmarking
SM	-	Supplier Management
TRAI	-	Training
N		
EI	-	Employee Involvement
EE	-	Employee Empowerment
ES	-	Employee Satisfaction
P	-	Postponement
PC	-	Process Control
TW	-	Teamwork
PSD	-	Product and Service Design
HRM	-	Human Resource Management

PM	-	Process Management
QA	-	Quality Assurance
ZD	-	Zero Defects
QC	-	Quality Culture
C	-	Communication
QS	-	Quality Systems
JIT	-	Just In Time
F	-	Flexibility
AVE	-	Average Variance Extracted
CFA	-	Confirmatory Factor Analysis
EFA	-	Exploratory Factor Analysis
CR	-	Composite Reliability
KMO	-	Kaiser-Meyer-Olkin
PCA	-	Principle Component Analysis
SPSS	-	Statistical Package for the Social Sciences
SEM	-	Structural Equation Modeling

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the Study

The automotive industry basically designs, develops, manufactures, markets, and sells motor vehicles. Nowadays many economists believe that the automotive industry is one of the most important economic sectors by revenue (Williamson, 2001). Also, it assumes a leadership role in implementing new technologies and has one of the most complex supply networks (Buxmann, Ahsan, Díaz and Wolf, 2004; Harrison, Lee and Neale, 2005). As a matter of fact, one of the biggest industrial sectors in the world is the automotive industry. Around 4% to 8% of the GDP and 2% to 4% of the labor force in the organization are contributed for Economic Co-operation and Development (OECD) countries by the automotive sector. Table 1.1 shows the Iran GDP growth and rate from 2009 to 2011.

**Table 1.1:** Iran GDP growth and rate (CIA, 2011)

GDP	2009	2010	2011	Country comparison to the world
Purchasing power parity(US dollars)	877.6 Billion	906.2 Billion	928.9 Billion	18
Official exchange rate	–	–	480.3 Billion	–
Real growth rate (%)	3.5%	3.2%	2.5%	137
Per capita (ppp) US dollars	11900	12100	12200	99

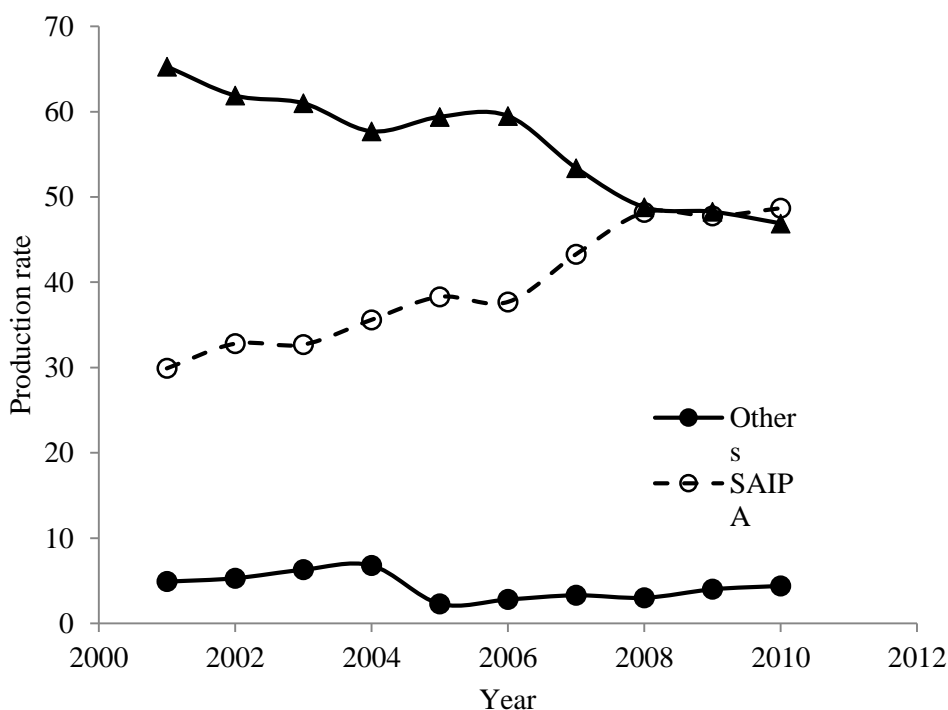
After oil and gas, the automotive industry can be described as the second most active industry in Iran. Iran has thus become the largest vehicle producer in the region; producing nearly 46 percent of all produced cars in the region, together with neighboring countries (Washington Post, October 14, 2013, press TV, 2011-11-11, AtiehBahar, 2012). Over the past decades, the automotive industry in Iran experienced an increasing trend. Several new automotive manufacturing companies have been established, and the Iranians started practicing the relaxation of protective policies. For every car produced, there were about 7.17 people in 2007-2008, while this figure increased to 16.8 people (Iranian-Parliament 2014). The high demands in the market, which are mostly due to urbanization, population growth, an increase in women's presence in the society and the emerging youth population lead to an increase in the production of cars in Iran (Automotive Industry", Supply Automotive Parts Company's –SAPCO- monthly publication, 2013).

This industry leads other industries in research and development (Rand D) investments, and its productivity level is beyond average. According to the United Nations Environment Program (2013), today's worldwide automobile producers directly influence a diversity of other industries. These industries are classifying from raw material and component suppliers, to producers of machine, technology and research institutes, car repair shops, retailers, driving schools and financial institutions. Therefore, they have an important effect on the economies of various countries (United Nations Environment Program, 2001).

Manufacturing in Iran was cut down during the 1978–79 revolution and the condition of the industry was not satisfactory. However, the imposed war with Iraq had impacted positively the growth of the industry. In the 1990s, Iran's economy did not improve and the investment in private section was low, but according to the "administrative system policy", declared by supreme leader of Iran to government in 2010, the government has allocated the highest amount of annual budget for improvement quality and innovation in public and private companies and organizations under the Iran's Five-Year Development Plan (2011-2015). This plan has been developed for the development of the country by more emphasizing on innovative product. Moreover, according to vision 2025 Iran must obtain the first

position in knowledge creation and technology in Middle East. Furthermore, in this vein, Iranian organizations must increase their productivity and innovation through development of knowledge management, creativity and the creation of innovative products.

Over 25 automakers dynamically produce both light and heavy vehicles in Iran. Currently, there are 13 public and privately owned car manufacturing companies in Iran. Many of these companies have subsidiary firms which produce different kinds of vehicles. The total number of automotive manufacturing units in Iran is 28. The largest market share belongs to Iran Khodro and Saipa companies with 96% share of the market. The other automakers belong to specific manufacturing groups including Runiran, Bahman Group, Shahabkhodro, Kerman Motor, Traktorsazi, Kish Khodro, etctogether produce only 3.7% as is shown in Figure 1.1.



**Figure 1.1** The share of automotive corporation circulation (AtiehBahar, 2011)

According to the recent reports by competent authorities, including automakers and parts makers association, there is a vacant capacity in the production

line of automakers and suppliers. Moreover, there are numerous customers lined up to buy cars. But, on the basis of the report of Iranian-Parliament (2014), the judicial authorities and national media such as television and newspapers, there are frequent reports about delay in delivery, poor quality and lack of innovative products in the Iranian automotive industry. This issues has caused to occur a lot of dissatisfaction among customers. According to Iranian scholars and practitioner in automotive industry one of the major dissatisfaction among customers is that these companies do not have a comprehensive platform to improve the quality and innovation in their supply chain.

Due to the global market changes, traditional approaches to supply chain management have lost their efficiency. Thus, in such conditions, the use of quality management capabilities can improve supply chain performance and also achievement of competitive advantage. Today the most important factor for firm success in a competitive market is to answer the customer needs. Companies have realized that optimizing operations within the company are not enough to achieve perfect business. Therefore, suppliers need to participate in quality improvement and answer the customer demands to improve performance (Kanji and Wong, 1999).

Due to rapid changes in technology, customer expectations and globalization trends, organizations need to design their processes to offer various products with low cost, high quality and also deliver to customers in the least amount of time possible. For success in such an environment, organizations cannot act as independent units and they should be looking to cooperation in supply chains to achieve competitive advantages. Using this method leads to the utilization of their collective capabilities and obtaining the new values for customers. These partnerships and alliances often find embodiment in the form of chains that are called supply chains and planning, organizing and controlling activities in the chain, is called supply chain management (Chan et al., 2003).

As competition has moved from single companies to supply chains, the insular focus on internal tasks has also changed. In fact, quality managers should coordinate and integrate their tasks with customers and suppliers (Kannan and Tan,

2005). Integration of quality management and supply chain management is important for future competitiveness (Robinson and Malhotra, 2005). Thus, quality management and supply chain management are two important tools that production companies use to achieve a competitive advantage. Using quality management capabilities can lead to improved supply chain performance and achieve a collective competitive advantage (Flynn, 2005). Applying quality management in the supply chain leads to lower costs, quick response to customer needs, better use of resources and performance improvement process.

Quality management is considered a principal strategy for the achievement of competitive advantages in the industry by focusing on some types of quality initiative, such as statistical quality control, total quality management, or zero defects (Chakrabarty and Tan, 2007). Total Quality Management (TQM) is a quality management approach that focuses on customer needs and process improvements. TQM can be traced back as far as 1949 with the formation of the Union of Japanese Scientists and Engineers (JUSE), a committee of scholars, engineers, and government officials dedicated to improving postwar Japanese productivity (Powell, 1997). TQM is designed to help organizations improve product quality, product service, customer satisfaction, and reduce management costs. Since its introduction in the United States in 1980, the emergence of TQM has been one of the most significant quality management developments in the past two decades (Cheng, 2007). In fact, properly focused efforts associated with the use of TQM can lead to improved production methods, proper allocation of resources, as well as improvements in production and management efficiencies (Chin and Pun, 2002). Studies have found that significant improvements in organizational performance can be achieved after approximately five years of effective TQM implementation; however, less significant improvements were achieved with shorter time frames (Schroeder et al., 2005). Organizations interested in ongoing improvement activities impacting quality products and services, customer satisfaction, and bottom line financial performance may be drawn to TQM efforts.

The firm's ability to provide its customers with their needed services and products at the best and highest quality has a significant effect on its success (Madu,



2004). Globalization affected the customer demand for quality (Handfield et al., 1998). Quality products will result in existing customer's retention together with attracting new customers, which in turn would enhance the market share. Based on the chain reaction theory (Deming, 1986), better quality will result in better market position. There are some empirical studies which support such a proposition. For example, Hendricks and Singhal (1997) provided statistical evidence in their study that presented a positive relationship between the TQM implementation program and firms' operation performance. Samson and Terziovski (1999), in their empirical study on the relationship between TQM practices and operational performance, indicated that the leadership, people's management and customer focus are the strongest predictors of operational performance. The result of surveying 226 quality managers conducted by Wilson and Collier (2000) showed that the basic theory of the Malcolm Baldrige National Quality award was supported.

The findings of surveying 165 practicing managers conducted by Madu et al. (1996) showed that critical quality factors, such as customer satisfaction, employee satisfaction and employee service quality, were linked to organizational performance. This report included an instrument for measuring organizational performance. Stepwise discriminant analysis was utilized by Kuei and Madu (1995) for the purpose of identifying quality management practices that separated organizations with "good performance" from organizations with "not-so-good performance". Larson and Sinha (1995) in their empirical study found that there is a relationship between quality management practices and some process or outcome constructs such as productivity, product quality and co-operation. Based on the investigation of the US General Accounting Office (1991) regarding the Malcolm Baldrige National Quality Award for the years 1988 and 1989, the organizational performance of the companies that adopted quality management practices was improved.

The quality management practices have shifted their focus from traditional company-centered approaches to overall supply chain systems. Actually, a firm's competitive priorities have changed from process and simple product quality to overall supply chain performances. Therefore, the main key ideas in order to make supply chain work properly are supplier quality management, supplier participation,

supplier selection and customer relations. David (1990) discussed the significance of the customer/ supplier relationship in order to achieve overall success in the whole system using Nissan Motor Manufacturing (UK) as an example. Quality management practices were investigated in a few empirical studies along the supply chain. In a field study of 165 Australian firms, Millen et al. (1999) examined the quality management practices in the logistic function based companies. On time delivery, supply chain quality and reliable suppliers are the three most important factors of supply chain quality. Moreover, the purchasing department appeared to have been detected in the quality environment rather than other departments in the logistics function.

In a study conducted by Wong et al. (1997), 107 managers in Hong Kong that administrate supply chain operations in Chinawere surveyed. The study utilized structure equations analysis to examine the interactions among suppliers and manufacturers. The findings of the study revealed that supply chain members' quality enhancing relations were affected by different factors including long term orientation, cooperation and trust. The findings of the empirical study of Choi and Rungtusantham (1999) showed that there are no statistically significant differences in quality management practices' level across the supply chain. Though, in the automotive industry, manufacturers were more active in areas, such as strategic quality planning. In another study, Tracey and Vonderembse (2000) confirmed that shipping damage will be reduced as a result of better supplier performance, such as timely delivery. They also indicated that higher bound component quality has positive effect on manufacturing performances.

Academic studies which pioneer in innovation literature attempted to explain the innovation concepts using organizational policies, practices and characteristics' definition. Companies started to realize the importance of innovation and creative ideas for their products, markets and processes (Pinchot, 1985; Stevenson and Jarillo, 1990; Hitt, et al., 2001). The global competition made the companies reconsider their business strategies and focus more on innovation (Hodgetts and Kuratko, 1998).

Innovation can be regarded as developing and applying new services and products in order to start newness in the economic environment. It can also be described as the knowledge transformation into commercial value. Innovation has a significant commercial importance because of its potentiality for enhancing profitability together with the efficiency of the companies. The most important reason that firms tend to be innovative is their desire to increase business performance and obtain a competitive advantage. Companies will be able to achieve additional competitive advantages which are significant factors for building a reputation in the market place and increasing market share depending on the level of importance they give to innovation. According to Millen et al. (1999), the economic structure of the firms will stay in one place or in other words in an inactive state with little growth if the flow of innovations. Therefore, innovation plays an important role in creating competitive advantages for firms and even countries. For example, the findings of the study by Fagerberg et al. (2004) showed that innovative countries had higher productivity and income compared to less innovative ones. Based on OECD reports, companies that developed innovations in a more influential way and at a faster pace had more qualified employees, paid them higher salaries and provided them with more inclusive plans for the future. In fact, innovations can affect the performance of the firm through increasing sales, market share, profitability, efficiency and productivity (OECD Oslo Manual, 2005).

Macadam and Keogh (2004) in their study on the relationship between the familiarity of the firm with innovation together with research and performance of the firm found that the tendency of firms toward innovations was very important in the competitive environment for gaining competitive advantages. Geroski (2005) investigated the effect of patents and innovations on different firms' performance measures, including corporate growth, stock market rates of return and accounting profitability. He found that innovation indirectly affects the performance of the firm, and its direct effect is comparatively small. However, innovative companies appeared to be less vulnerable toward cyclical sectorial and environmental pressures than non-innovative firms.

## 1.2 Problem Statement

The high rate of innovations and the globalization trend have resulted in the development of firms' networks. Supply chain management (SCM) has been considered as the most important organizational practices for achieving performance, especially for networks and alliances with customers and suppliers (Rungtusanatham et al., 2003; Janvier-James, 2012). Supply chains' successful design and implementation will lead to a decrease in cost, an improvement in flexibility, enhancement in quality and ensures satisfaction of customers. Understanding factors that are critical to designing effective supply chains and maintenance has received great attention of researchers and scholars (Childerhouse et al., 2002; Vonderembse et al., 2006; Voss and Stevenson, 2009). Therefore, understanding quality issues in the supply chain is very important for the performance of supply chain together with firm's success. Lin et al. (2005) also pointed out that quality management (QM) practices integration with those of the supply chain management can provide necessary collaboration that leads to an improved organizational performance.

The main purpose and initiative of QM and SCM are different which can complicate an integrated implementation. However, they have been developed in similar ways in order to reach the same final goal which is customer satisfaction. The emphasis of QM is on internal participation (employee) while the emphasis of SCM is on external partnerships (Business partners). Therefore, there is a need to emphasize both external and internal partnerships for further strengthening the emphasis on "total" TQM and the whole supply chain in SCM.

According to Sila et al., (2007) supply chain management (SCM) and quality management (QM) are both important for organizational competitiveness. In the competitive constantly changing global market, quality products are not enough anymore. The focus on supply chain for determining the right place and right time to deliver the product is a new challenge that the companies are facing (Chin et al., 2004; Robinson and Malhotra, 2005).

International business competition now includes the supply chains and is no longer limited to organizations (Li et al., 2006; Kuei et al., 2001). Though both SCM and QM are important for organizational performance, there are limited studies that examine them together (Gunasekaran and McGaughey, 2003; Robinson and Malhotra, 2005; Casadesus and Castro, 2005). Recent product recalls and vulnerability of supply chains to risk and disruptions reveals that although the philosophy of quality management and SCM has been investigated successively, supply chains suffer from the malicious implementation of the quality issues (Zhang et al., 2011).

Based on our knowledge, there is a negligible quantity of research concerning these two crucial concepts simultaneously in conjunction with each other (Sitkin et al., 1994; Ross 1998; Foster, 2008; Foster et al., 2011; Zhang et al., 2011). Empirical studies suggest that organizational performance is achieved when quality approaches and supply chain practices are implemented concurrently (Tan et al., 1998, 1999). This has resulted in a merging of quality management and supply chain management principles. Those who handle purchasing and logistics functions have gained a more quality-minded approach, and operations managers have increased their external focus on customer satisfaction (Foster and Ogden 2008).

Former scholars introduced the topic of supply chain quality management (Malhotra et al., 2005; Lin et al., 2005; Flynn and Flynn, 2005; Yeung, 2008; Sroufe and Curkovic, 2008; Kaynak and Hartley, 2008; Kuei et al., 2011; Azar et al., 2010). The focus on SCQM needs to shift from a product-based and firm-centric attitude to an inter-organizational supply chain orientation, including supplier, customers and other partners (Robinson and Malhotra 2005). Though some researchers tried to empirically examine whether there is a positive relationship between SCQM and performance (Easton and Jarrell, 1998; Hendricks and Singhal, 1997), there is a growing concern regarding the SCQM programs and whether they lead to real economic achievement or even improvement in operating performance or not (Agus and Abdullah, 2000).

Despite the fact that the importance of quality is significant for many supply chain managers, the association between the supply chain quality management practices and organizational performance is still controversial and further research is required to determine the critical SCQM practices on organizational performance (Kuei et al., 2008). SCQM is still in the definitional stage, and rigorous studies of SCQM practices have yet to emerge. However, the proposed list of supply chain quality management practices is not exhaustive (Mellat-Parast, 2014) since most of the previous studies in SCQM practices have focused on the quality management practices that addressed the internally driven product-oriented (Azar et al, 2010; Malhotra et al., 2005), and the essential features that lead to performance achievement have not been fully explored (Lin et al., 2005; Robinson and Malhotra, 2005). The necessity is to fill the gap of research for a unique set of practices that address both external and internal factors that govern the SCQM practices.

Despite literature use of SCQM and scholarly interest, our understanding of the process by which SCQM practices affect organizational performance still needs further research, (Mellat-Parast, 2014) and some authors decided to conclude that instead of viewing this relationship as a direct one, it ought to be mediated by other constructs (Macaes et al., 2007). Although literature has established that SCQM practices have positive impacts on organizational performance (Azar et al., 2010; Li et al., 2006; Kuei et al., 2001; Robinson and Malhotra, 2005), the varied results imply that the effects of SCQM practices on performance may be contingent on organizational factors.

Based on a contingency approach, SCQM practices are more effective when they are fitted with organizational factors though the general approach proposed that QM and SCM practices are always more useful and effective than other practices in any kind of firm(Kuei and Madu, 2001; Bowersox et al., 2002). The product-related innovative activities of the firms form an important task of strategic management and are also supposed to be of strategic nature. However, there are few studies that examined the way SCQM practices and innovation affect the organizational performance of the firm. Despite the growing number of studies on SCQM, studies

on this topic in relation to innovation are still in the initial stages, particularly in developing countries (Wang and Kafouros, 2009).

In particular, the role of innovation in the context of SCQM remains empirically weak (Prajogo and Sohal, 2001, 2003). Keeping track of limited research on this issue, the present study centers on the mediating role of innovation in the SCQM – organizational performance link. As such, managers have indicated that innovation is the engine of growth and the dominant driver of business value (Ghosal and Nair-Reichert, 2009; Roper, Du and Love, 2008), and also innovation is the reason for existence of any business (Deshpande et al., 1993). Economists and management scholars agree on the role of innovation in generating economic rents at the firm, industry, or economy level (Brynjolfsson and Schrage, 2009; Porter, 1990; Schumpeter, 1942; Van De Ven, 1999).

This study examines how the degree of innovation in a firm affects the relationships between organizational performance and SCQM practices. It will also examine whether innovation mediates the relationship between SCQM practices and organizational performance. Innovation can be considered as one of the most important and essential ways applied by the companies to differentiate themselves from their competitors (Porter, 1980; Damanpour et al., 2009). Innovation has become the most important challenge that most companies face due to the intensified local and international competitions. Though there are different definitions for innovation, it generally refers to the utilization of new ideas, behavior and procedures in the organizations, such as new services, products, administrative systems, organizational structures and process technologies (Damanpour, 1996).

For most companies, innovation is the main challenge as a result of intensified local and international competition. Until now, most of the studies concerning innovation have either examined the factors that affect innovation and predict it (with innovation as a dependent variable; e.g. Monge et al., 1992; Damanpour, 1996) or investigated the effect of innovation on the survival and effectiveness of the firms (with innovation as an independent variable; e.g. Amabile, 1988; Woodman et al., 1993; Mumford, 2000).

In the present study, this study examines the effects of SCQM practices and innovation on performance while considering innovation as a mediator. Moreover, the motivation to consider innovation as the mediator of the relationship between SCQM practices and performance is based on the emerging need for research in the SCQM field, suggesting the importance of innovation in performance. (Brynjolfsson and Schrage, 2009; Porter, 1990; Schumpeter, 1942; Van De Ven, 1986); firms that are persistent innovators have been demonstrated to appropriate superior economics compared to their competitors.

Automaker firms are required to satisfy customer needs for quick and on- time delivery of quality products at lower prices even in unpredictable economic crises and natural disasters. In the industry parts and complexes as well as services are usually provided by suppliers. Moreover, product realizing processes are quiet complicated. According to the report of the Iranian parliament (2015), in the judicial authorities and national media, such as television and newspapers, there are frequent complaints about the poor quality and lack of innovative products in the automobile industry. To achieve quality products and innovation, it is necessary to simultaneously and comprehensively consider the issue of quality and innovation throughout the supply chain.

The high rate of innovations and the globalization trend have resulted in the development of firms' supply chain. Supply chain management (SCM) has been considered as the most important organizational practice for achieving performance, especially for creating alliances with customers and suppliers (Rungtusanatham *et al.*, 2003; Janvier-James, 2012). Successful application of supply chain management will lead to a decrease in cost, an improvement in flexibility, enhancement in quality and ensures satisfaction of customers. Understanding factors that are critical for effective implementation of supply chains has received a great attention of researchers and scholars (Vonderembse *et al.*, 2006; Voss and Stevenson, 2009). According to Lin *et al.* (2005) integration of supply chain management and quality management practices can provide necessary collaboration which leads to an improved organizational performance. Empirical studies suggest that organizational performance is achieved when quality approaches and supply chain practices are



implemented concurrently (Tan *et al.*, 1998, 1999). Despite the fact that scholars have separately investigated the effect of quality management and supply chain practices on organization performance, nevertheless, scholars neglected to provide comprehensive practices for SCQM and its effects on firm performance (Zhang *et al.*, 2011; Foster *et al.*, 2011).

Innovation is one of the fundamental ways for companies to improve their products and to differentiate themselves from others (Porter, 1980; Damanpour *et al.*, 2009). For most companies, innovation is the main challenge as a result of intensified local and international competition. Up till now, scholars (Abdullah and Tarí Guilló, 2012; Kong *et al.*, 2008) have reported that quality management practices do not have any direct effect on organizational performance, but the effect is through other antecedents of organizational performance, such as innovation. Moreover, there are studies (Chong *et al.*, 2011; Li *et al.*, 2006) that have brought empirical evidence on the positive direct effect of supply chain practices on organizations' performance. Furthermore, there are studies (Didonet and Díaz, 2012; Hanifia *et al.*, 2014) that have provided scholarly evidence about the direct and indirect effect of supply chain practices on innovation. Despite the importance of quality throughout the supply chain, studies about the effect of supply chain quality management practices on organizational performance through mediating variable innovation are few and far between (Mellat-Parast, 2014).

Hence, the purpose of the study is to investigate the effect of SCQM on firm performance directly and through innovation. Therefore, the results of the study by a theoretical and comprehensive approach may clarify the role of the SCQM on the achievement of sustainable development. Moreover, the findings theoretically shed light on the eight important and intangible antecedents of organizational innovation in form of SCQM practices and their effects on organizational performance.

Based on the above discussion, though supply chain management (SCM) concepts have become a subject of interest in recent years, there is a lack of studies examining its interlinking with the quality management point of view (Zhang *et al.*, 2011; Robinson and Malhotra, 2005). Despite the importance of quality

management, there is a lack of studies concerning the evaluation of quality management issues particularly within internal and external supply chain settings. Therefore, this study provides the definition of the concept of supply chain quality management (SCQM).

As the matter of fact, there are numbers of research gaps with respect to the relationship between the SCQM practices and performance. The impact of QM and SCM practices on performance has been measured separately in the majority of prior studies (Tiwari et al., 2007; Lagrosen and Lagrosen, 2006; Kannan and Tan, 2005; Flynn, 2005; Sousa and Voss, 2002). However, those studies have some limitations. Perhaps the main limitation is that those studies did not use the benefits of variables synergies, while the current research aim to study those variables jointly as SCQM to increase the theoretical knowledge of the relationship between SCQM practices and performance.

Secondly, the proposed list of supply chain quality management practices is not exhaustive. Major shortness of the previous studies is that they have focused solely on the internal dimension of SCQM, so they use QM practices for SCQM (Azar et al, 2010; Malhotra et al, 2005). Regardless of efforts in these fields to create a set of practices, unfortunately the results are uncertain and we could not suggest which practices are critical. To fill this gap, this research decided to extract the best quality management and supply chain management practices and make a set of practices for supply chain quality management through combining those practices recommended in SCM and QM by comprehensively reviewing prior literature in major journals. Therefore, based on the literature, the SCQM practices used in this study are as follows: leadership, customer focus, information analysis, training, strategic planning, teamwork, process management, strategic supplier partnership, internal lean practices and postponement.

The third problem is that the researchers have taken a direct look into the relationship instead of using mediators. The emerging necessity for research in SCQM and performance relationship improvement requires more attention to take mediators. It is particularly relevant to observe that despite the increasing number of

studies on SCQM, research on this practice associated with innovation is still incipient, in particular in developing countries, (Wang and Kafouros, 2009) and also SCQM practices facilitate innovation in products through collaborative integration of processes among agents (Kaminski et al., 2008). As such, managers have indicated that innovation is the engine of growth and the dominant driver of business value (Ghosal and Nair-Reichert, 2009; Roper, Du, and Love, 2008). Economists and management scholars agree on the role of innovations in generating economic rents at the firm, industry, or economy level (Brynjolfsson and Schrage, 2009; Porter, 1990; Schumpeter, 1942; Van De Ven, 1999).

Moreover, among the dominant investment initiatives that are related to QM and SCM investments, innovation ranks among the top; and firms have been devoting more resources toward innovation initiatives for quite some time now (Agarwal and Sambamurthy, 2002; Barua and Mukhopadhyay, 2000).

McAdam et al. (2004) showed that attempts devoted to quality throughout supply chains give a required and essential basis for implementing innovation in the organizations' context (Curry and Clayton, 1992). Based on the findings of different studies on innovation, collaboration between different parties, such as customers, firms and suppliers, contributes to the innovation. Innovation in products in Korean SMEs was facilitated using SCQM practices. In a study on Canadian companies, Doloreux (2004) showed that innovation in these was based on external networks they established with their customers and suppliers. In Spain, the significance of collaboration among firms and suppliers for the purpose of technological innovation was shown in a study conducted by Bordonaba-Juste and Cambra-Fierro (2009). In another study by Abereijo et al., (2009), the significance of customers and suppliers as the key source of technological innovation in Nigerian companies was confirmed.

According to the recent reports by competent authorities, including automakers and parts makers association, there is a vacant capacity in the production line of automakers and suppliers. Moreover, there are numerous customers lined up to buy cars. But, on the basis of the report of Iranian-Parliament (2014), the judicial authorities and national media such as television and newspapers, there are frequent

reports about delay in delivery, poor quality and lack of innovative products in the Iranian automotive industry. Supply chain quality management of the Iranian automotive industry is also faced with this problem, and this issue has made this sector weaker (Entesarian, 2014). These issues have caused to occur a lot of dissatisfaction among customers. According to Iranian scholars and practitioner in automotive industry one of the major dissatisfaction among customers is that these companies do not have a comprehensive platform to improve the quality and innovation in their supply chain.

In Iran, the automotive industry has enormous potential for growth. Demand growth in overseas markets has led to a high volume of investment in this sector. However, to ensure success in the overseas markets, the whole Iranian automotive industry supply chain should endeavor to eliminate quality defects through the implementation of continuous improvement initiation to increase the level of service to customers with minimum possible cost. A supply chain quality management model unique to the Iranian automotive industry is therefore very timely to bring its performance to a higher level. It is expected that this research, besides its theoretical contribution, will also identify practical recommendations to bring the Iranian automotive industry to the next level of performance.

### **1.3 Research Objectives**

According to the problem stated, the objectives of the present study are as follows:

1. To identify the best practices of SCQM
2. To examine the effect of SCQM practices on innovation
3. To examine the relationship between innovation and organizational performance
4. To examine the relationship between SCQM practices and organizational performance
5. To examine the role of innovation on the relationship between SCQM practices and organizational performance

## **1.4 Research Questions**

This study will provide a model that will improve performance in the automotive industry. There are five research questions that have motivated this study:

1. What are the key SCQM practices in the context of automotive industry?
2. To what extent SCQM practices affect innovation?
3. To what extent innovation affect organizational performance?
4. Which of the SCQM practices affect organizational performance?
5. Does innovation mediate the relationship between SCQM practices and organizational performance?

## **1.5 Scope of Study**

The scope of this research revolves around exploring Iran's automotive industry. Due to the role and importance of SCM and TQM implementation for business organizations and companies as stated above, the scope of this thesis is an a priori study of supply chain quality management implementation in the automotive industry of Iran in the context of critical practices. The automotive industry has been chosen since it is a strategic and crucial industry in Iran. In fact, this industry is the country's fastest growing industry.

In the 1960s, the automotive industry was developed in Iran with foreign vehicle manufacturers' arrival. Today, the automotive industry is experiencing a growth year by year and has turned to be one of the main economic activities of the country after the oil production industry. Two state-controlled automotive giants, SAIPA and IRAN KHODRO, which constitute 65% of the market for light commercial and passenger vehicles, produce most of the production of the automotive industry in Iran. Therefore, thus this study chooses the IRAN KHODRO (IKCO, 2007).

Since this study has a supply chain management and total quality management focus, the target respondents are senior and executive-level managers as these personnel were deemed to have the best knowledge in the supply chain area.

## **1.6 Significant of Study**

Scholars in the past three decades emphasized the crucial role of supply chain and quality management practices on organizational innovational capability and performance. In spite of the comments of scholars about the importance of the supply chain and quality management principles many organizations do not have a clear picture about their advantages. The current study and related results are considered significant for providing vision into consequences of SCQM in the Iranian automotive industry.

The first theoretical significance is related to offering a new model to measure the impact of supply chain management and quality management practices on organizational performance. This study by synthesizing supply chain quality management practices and by taking into account the momentous role for the practices to improve organizational innovation capability and performance active in automotive companies endeavored to open a new window toward enhancing organizational innovation capability and performance. Moreover, the study tried to shed a new light on innovation capability in the automotive industry by introducing and integrating two intangible and generous antecedents of organizational innovation capability. Therefore; the results of the study have great potential to provide a basis for future theoretical and empirical studies on the automotive industry and to provide new ways to improve organizational performance and innovation capability in the aforementioned industry.

The second theoretical significance is related to innovation capability. On the basis of reviewed literature, innovation capability has an overwhelming positive influence on organizational performance. Previous scholars have examined the effect of innovation capability on organizational performance by a restricted

approach to its antecedents. It is obvious that the results of such studies cannot express the actual capacity of the organizational innovation capability. This study incorporates supply chain and quality management practices as two crucial intangible antecedents of organizational innovation capability to provide a better comprehensive model for enhancing innovation capability. Therefore, the present study in line with the resource-based theory by emphasizing the two important intangible assets of organization tried to provide a new platform for enhancing organizational innovation capability in the automotive industry.

The third theoretical significance is related to introduce a comprehensive framework for enhancing quality, organizational innovation and performance across the supply chain. Despite that the issue of quality and innovation are considered essential for the supply chain, the relationship between the SCQM practices, innovation and organizational performance is still controversial, and further research is required to determine the relationships. Moreover, there is no common language for supply chain quality management practices (Mellat-Parast, 2014). This study is in line with resource-based theory and by incorporating two important intangible assets of the firm ( quality management and supply chain practices ) and by emphasizing the inter-organizational supply chain instead of product based and firm-centric attitude, the researcher tried to bring a new platform for enhancing quality, innovation and performance across the supply chain.

In order to compete in the global marketplace, companies must improve their competitive aspects. Quality is one of these aspects. Quality is the criterion to winning and also is considered as the criterion to determine competency for many companies. Although a lot of efforts have been done to improve the supply chain in recent years, little attention has been paid to applying quality management throughout the supply chain. In the past decade, evidence of applying quality management outside the factories and in the supply chain has been seen. Many organizations that have applied quality management have realized its benefits in the supply chain. This is because creating strong partnerships between suppliers in quality management programs can be closer suppliers to customers and also improve product quality and process quality. Quality management will expand cooperation

opportunities because people learn how to fit their roles in a bigger picture as well as how the process interdependence in all sectors of activity can be understood and measured (Pandey et al, 2009).

On the other hand, Iran's automotive industry will have excellent changes in the very near future and is expected to become one of the nation's largest companies. The high volume of investments in this sector, crisis resulting from joining the World Trade Organization (WTO), their acceptance of international trade tariffs and global competition have led to special attention to this industry. However, to activity in new conditions the whole automotive industry supply chain should try to eliminate quality defects and continuous improvement to increase the level of service to customers with minimum possible cost. Only a small part of quality problems are created because of assembly of the final product, and major produce defects are because of raw materials and incoming parts to the company. While in recent years, the number of supplier companies and automotive industry customers have increased significantly, automotive companies need a model that used quality management activities throughout their supply chain. This topic has already been considered but not completely.

The model can prioritize the SCQM practices and also can identify the effective factors on performance, and then managers allocate financial resources, time and more energy to them. In other words, the relation's framework between quality management practices in the supply chain provides a basis for measures that supply chain members do it to achieve excellence. The framework can act as an assessment tool because it determines the strengths and weaknesses in each executive field of firms. Finally, the results of this study could give useful guidelines to effective supply chain management.

There are numerous initiatives that potentially help manufacturing and non-manufacturing organizations in implementing best practices in quality management. Some of these initiatives include Total Productive Maintenance (TPM), Total Quality Management (TQM), Lean, and Six Sigma. There are many success stories that outline the achievements of companies through the implementation of these



initiatives; there are also many projects where these initiatives have failed. The result is skepticism and confusion about what to adopt and how to adapt these disparate and generic initiatives in a specific environment (Tiwari, Turner and Sackett, 2007). According to Waldman (1998), companies have often become frustrated due to TQM programs not producing tangible results in a rapid manner. Also, when people-based aspects of quality management are misunderstood and misapplied, TQM can be seen as a dysfunctional approach that detracts from people and negatively impacts job satisfaction (Soltani, Gennard, vander Meer, and Williams, 2004). The expectation for this study is to provide additional insight into studies previously conducted and future studies associated with the implementation of TQM practices. By understanding the critical practices which impact the organizational performance, a model or set of recommended procedures could be developed to aid organizations in their continuous improvement journey.

## **1.7 Defenition of Key terms**

There are a number of terms which will be used frequently in this study. In this section a brief definition of these terms will be provided. A more complete explanation will be presented in the next chapter.

### **1.7.1 Organizational Performanance**

. Organizational performance is defined as the ability of an organization to achieve its goals and objectives. Organizational performance can be evaluated in the two aspects, namely operational performance and business performance (Pitt and Davis, 2009).

### **1.7.2 Innovation**

Innovation is the adoption of an idea, process, or behavior that is new to the adopting firm (Daft, 1978; Damanpour, Szabat, and Evan, 1989; Azar, 2010).

### **1.7.3 Supply Chain Quality Management**

Supply chain quality management is a systems-based approach to performance improvement that integrates supply chain partners and leverages opportunities created by upstream and downstream linkages with a focus on creating value and achieving satisfaction of intermediate and final customers (Foster, 2011)

## **1.8 Plan of the thesis**

This thesis will be organized in five chapters. This chapter offered an overview of this thesis. The problem statement was introduced, research objectives were determined, and the scope and contribution of the study were discussed. Chapter 2 reviews the relating literature of the conceptual and practical aspects of QM, SCM and SCQM and their practices, innovation and also organizational performance. This review will provide a rationale for the scope and the conceptual model. Chapter 3 defines the research methodology. The conceptual model will be discussed, research questions, sampling design, research instrument, data collection and processing, and reliability and validity tests. Chapter 4 includes the data analysis part, which contains description of the results, discussion of the research findings, and testing the research questions. Finally, chapter 5 is devoted to the conclusions and the recommendations. In addition, implications of the findings to the industry's practitioners will be discussed and suggestions of the needed further research will be presented.

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