

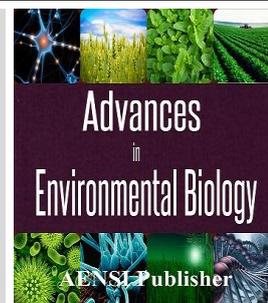


AENSI Journals

Advances in Environmental Biology

ISSN-1995-0756 EISSN-1998-1066

Journal home page: <http://www.aensiweb.com/AEB/>



The Relationship between Total Quality Management and Supply Chain Development of Automotive Companies Listed in Tehran Stock Exchange

Ayyub Sheikhy and Arezo Hamzeie

Department of Management, Kerman Branch, Islamic Azad University, Kerman, Iran

ARTICLE INFO

Article history:

Received 11 October 2014

Received in revised form 21 November 2014

Accepted 25 December 2014

Available online 16 January 2015

Keywords:

Total quality management, Supply chain development and Automobile companies listed in Tehran Stock Exchange.

ABSTRACT

The present study examines the relationship between TQM and supply chain development of automotive companies listed in Tehran Stock Exchange. The research is descriptive. Data collection tools include questionnaire, the validity of questionnaire was approved by professors and its reliability was evaluated using Cronbach's alpha coefficient. The statistical population of this study is managers and assistants of automotive companies listed in Tehran Stock Exchange. The statistical sample included 102 automotive companies listed in Tehran Stock Exchange that were selected randomly using Cochran formula. Structural equation modeling was used for statistical analysis of data using LISREL software. The results show that there is significant relationship between parameters of total quality management and supply chain development. Product designs, strategic commitment of quality and reliable supplier have had the highest effect among total quality management factors.

© 2015 AENSI Publisher All rights reserved.

To Cite This Article: Ayyub Sheikhy and Arezo Hamzeie, The Relationship between Total Quality Management and Supply Chain Development of Automotive Companies Listed in Tehran Stock Exchange. *Adv. Environ. Biol.*, 9(2), 334-342, 2015

INTRODUCTION

In today's tough competitive environment, activity in supply chain and providing high quality services is the key to sustainable competitive advantage. In a competitive market, the economic and productive enterprises consider organization and national interests as well as need to management and monitor all aspects of interests outside the organization. The reason is to achieve competitive advantages or benefits with the aim of obtaining a greater share of market. Accordingly, activities such as supply and demand planning, sourcing, production and product planning, storage of goods services, inventory control, distribution, delivery and customer service that were already done at company level and now, it has transformed to supply chain. A key issue in supply chain is management, control and coordination of all activities. Supply chain management is a phenomenon that implements this in a way so that customers can receive reliable services with qualified products at the lowest charge [13].

Supply chain management continues as a set of methods for management and coordination of entire supply chain, from suppliers' supplier management to customers' customer [2]. One of the scientific decision criteria in business is to enjoy the view of supply chain. This attitude of business can cooperate with other businesses in the areas of procurement, production, processing, distribution and transport, storage and information technology and provide ultimate customer satisfaction [26].

TQM has been accepted widely as a mean to maintain the quality of supply chain [6]. It is known in supply chain literature that quality of services effect on business [4]. The most important issue is quality management is to diagnose that quality improvement is followed pervasively and seriously by all departments and agencies and ensure that all people are involved in this field [18].

Total quality management includes management and quality control within organization and entire supply chain [7]. This article attempts to explain how a comprehensive quality management approach can be used in firms listed in Stock Exchange in order to achieve supply chain management?

Corresponding Author: Arezo Hamzeie, Department of Management, Kerman Branch, Islamic Azad University, Kerman, Iran
E-mail: f_shab2007@yahoo.com

*Supply chain:**The concept of supply chain:*

Supply chain refers to all activities related to product flow (service) from source of raw materials to final consumers (including the information necessary for production flow, integration management, and integration of these activities both inside and outside the company) [8]. Generally, supply chain is a chain that includes all activities associated with goods flow and transformation, from preparation of raw materials to delivery of final goods to consumer. (Figure 1) flow of goods and materials in supply chain management (Ladan, 2002)

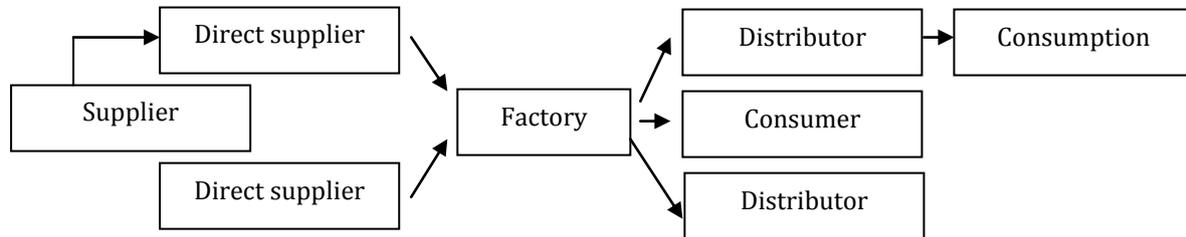


Fig. 1: Flow of goods and services during supply chain management.

Accepting this definition of supply chain, we can say that supply chain management is a combination of art and science that is used to improve access to raw materials, products or services or transfer them to customers. Supply chain management includes the integration of supply chain activities and information flows through improved supply chain relationships in order to achieve continued and reliable competitive advantage; therefore, supply chain management is a process of integrating supply chain activities and information flows related to information flows through improvement and harmonization of activities in supply chain of manufacturing and supply of products [24].

The main components of supply chain management:

- Logistics management in supply chain
- Information management and information systems of supply chain
- Management of relationships between members of supply chain

These three components are considered as strategic characteristics of supply chain and it is noteworthy that material flow is forward and continues from suppliers of raw materials until the final customers and passes through members of supply chain, ie suppliers, producers and distributors and is known as logistics management of supply chain. Another feature that directs materials is information flow that moves backward and begins from end consumer and ends with suppliers and passes through other members of supply chain in its path. This information indicates customer demand for product or products and services. There is another factor that integrates material and information and that is the relationship between members of supply chain and is known as management of supply chain relationships [11].

According to "Christopher", supply chain is a network of upstream and downstream organizations that are involved in different activities and processes and make value for end customer in the form of products and services. This definition emphasizes satisfaction of customer demand in all of supply chain activities. Based on this definition, SCM is shown in Figure 2. The roof of this house shows SCM ultimate goal that is competitiveness. The only way of surviving companies and organizations, with the globalization of markets, is subject to increase competitiveness and maintain stable competitive advantage. Customer services must be agenda of activities in order to achieve competitiveness of supply chain. The competition between individual firms has replaced with competition between supply chains. One of the necessary capabilities to achieve competitiveness of supply chain is information sharing. The information sharing refers to company ability in order to share knowledge with supply chain partners efficiently and effectively. Effective information sharing is considered as one of the basic capabilities of supply chain process. In this study, the information sharing effect concerns competitive strategy and supply chain performance [5].

*Total Quality Management:**1. The concept of quality:*

International organization of standard defines quality as a set of service or product specifications in order to ensure customer ensured needs. The aim of quality system is to provide necessary trust for clients and senior management of organization during provision of services [14]. The quality issue is widely considered in production and industry as well as in service sector. Hospitals have a special place, since a mistake can be irreparable. Therefore, it is necessary to provide services flawlessly and according to professional standards [19].

The conceptual quality is changed. The concept of quality is different in people minds; therefore, the sense of quality will not be same for customer and specialist or manager [12]. The full definition of quality may be found in expression of a scientist named David Garvin. He defines quality in five basic attitudes, the five attitudes include:

- 1) Philosophical view to Management: According to this view, the quality is a philosophical concept and means an absolute, perfect and complete situation. According to this view, quality cannot be measured and showed in the scale and size; however, it can be recognized.
- 2) Product oriented quality view: According to this view, when the defined standards and criteria for a product are not fully utilized in its construction, the quality will be decreased; for example, features such as engine power in kilowatts, or percentage of essence consumed in drinks or passenger seating space in aircraft. The quality is calculated through measuring the technical criteria.
- 3) application- base quality view: This view of quality will make sense when consumer is satisfied by purchase and using products; in other words, when his needs are met. This type of quality can be evaluated through measuring satisfaction of consumer or his feelings and observations.
- 4) Production- based quality view: If, technical standards and specifications of design are ignored completely in the manufacture of product, there will be difficulties in production and product assembly. In this case, the production quality will be questioned and quality view will be provided according to production. This kind of quality can be measured through process study, production rate and its control.
- 5) Value- based quality view: According to this view, the quality is benefits of buying a product to amount of spent money ratio. This type of view can be computed through comparing the products and their performance and productivity [9].

Sitkin *et al* proposed two approaches of quality as follows:

- a. Full control that is focused on control.
- b. Full quality learning is focused on learning dimension [25].

2. Total Quality Management:

There are many definitions in the case of total quality management concept. We can say that TQM is organization coordination method that is composed of following three terms:

A: T = total: in all obligation areas, all levels, and all those who are associated with organization.

B: Q = Quality: meeting the needs and requirements of customers

C: M = Management: the effective use of resources to maintain existing levels, effective use of resources to improve the quality, executive commitment in order to execute programs [10].

Total quality management is based on three principles;

A: Focus on understanding and respond to needs of customers;

B: Continuous improvement of products, services and processes on a regular basis;

C: Group participation through which customer satisfaction is realized and makes possible all participation and effort including managers, employees and suppliers.

Community quality management is a customer oriented management approach where all individuals attempt continually to improve their business processes so that supply customers better quality services [16].

The development of service resources in last three decades, changed from quality dimension that has always been looking for technical characteristic to customer satisfaction through providing their highest expectations. Total Quality Management movement began in the manufacturing industry, since measuring quality performance and commitment to producing high quality products was easier there; but the aim of total quality management is to create organizational and cultural change and is driven forward by people force and finally it leads to teamwork, morale increase, profitability and organizational culture improvement. Therefore, concept of total quality management is important for service sector and manufacturing sector [1].

Using TQM in service sector having has great benefits. Firstly, applying total quality management leads to better quality services compared to services provided by competitors and increases market share and profits. Secondly, the reputation of quality provides permanent customers for organization who are less subject to market fluctuations. Thirdly, it attracts qualified people to organization. Fourthly, quality improvement leads to increased production, reduced costs, improved income and promoted posts and increased morale due to the relationship between quality and productivity. Finally, the cultural change that is the aim of total quality management helps service sector to focus on customer needs, thus, the position of organization will be stronger among customers [22]

1. Mahdavi-zade *et al* (2010), present in an article entitled "A model for determining the level of commitment and adopting total quality management (case study on suppliers of Saze Gostar Saipa Co.)": TQM is an approach that many organizations have chosen to survive in the competition. Managers need to know about the level of TQM in their organizations. Although, the level of TQM can largely represent the position and organization level in compliance with this approach, it must be noted that only institutionalization of

comprehensive quality management is as an organizational practice that can guarantee the sustained and successful presence of organizations in this attitude.

2. Thus, TQM acceptance as organizational habit will be important regardless of implementing total quality management. In this study, we presented a model in order to evaluate the adoption of total quality management in organizations as an organizational habit. A questionnaire is prepared and distributed among suppliers of Saze Gostar Saipa Co. and the model is analyzed. Comparing the results of implementing this model in the chain and information that already existed in this chain, model validity is evaluated and new picture of supply chain of company is offered.

3. Movahedi Pur and Yahya Pur (2010), offered in an article entitled "Study barriers and provide approaches for establishing a total quality management system, case study: (Mazandaran Cement Co. (Neka))": The main aim of this study is to investigate the barriers and provide appropriate approaches in order to establish a total quality management system (TQM) in Mazandaran Cement Co. (Neka). This paper is an introduction to further research in order to detect obstacles and factors affecting the establishment of total quality management system. The statistical population consisted of 110 managers, supervisors and specialists of Mazandaran Cement Co. (Neka) and sample size is $n = 86$, according to Morgan Table. Standardized questionnaire is used for data collection and collected data are analyzed by SPSS software and χ^2 test is used in this respect. The results confirmed and rejected a number of hypotheses.

4. Samii Neiestani *et al* (2010) presented an article entitled "Explanation of total quality management effects on organizational performance in research and development areas (The mining case: manufacturing companies of central province)". This article is developed on the basis of descriptive method and using this method, the effect of TQM on R & D performance was tested in the fields of production quality and innovation. Study data has been collected from 128 R & D departments of manufacturing companies located in central provinces. Questions are used in this study, firstly to examine the application of TQM principles in R & D areas and secondly, TQM effects on R & D performance. TQM functions have been measured by six criteria of Malcolm Baldrige International Award and R & D functions by aspects of innovation and product quality. Data were analyzed using SEM techniques and results show the integrated application of TQM activities in R & D setting and significant effect of TQM principles on R & D performance in organizations. According to these results, it is recommended that TQM consists of a set of basic principles and is able to be adapted with production areas as well as other areas of organization.

5. Azar and Mohammadlou Moslem (2010) present in an article entitled "Designing service quality model of supply chain: Explaining the concept of interactive services": Today, the key to sustainable competitive advantage in a severe competitive environment is to act in supply chain and provide high quality services. The relationship between service quality and business performance, reduced costs and customer satisfaction has been confirmed in several studies. This study, examines quality as central company understanding from received services, as well as it presents expectations and perceptions of supplier performance as a central component of service quality, for the first time. Thus, it presents the quality of services in new concept and interactively. Automotive companies and their suppliers are considered as statistical population in order to implement the designed model; totally, 35 couples were selected as sample and key gaps were defined and measured in both direct and reverse directions between supply chain elements. Interactive view to quality of services along with conceptual model and measurement parameters of supply chain are considered as theoretical and methodological contribution of study.

6. Azar and Ahmadi Kohan (2008) present in an article entitled "Development of a model to explain the relationship between quality management enablers of supply chain with structural equation modeling approach (SEM)": this study examines quality management enablers and the relationship between these factors using structural equation modeling of supply chain. A conceptual model was presented after careful study of total quality management and supply chain management literature in order to achieve this aim and on this basis 220 questionnaires were collected from supply chain of Iran Khodro Co. The results show that all indices related to any of enablers evaluate the factor significantly. Leading influences supplier quality management, strategic planning and human resource management and strategic planning influences supplier quality management and human resource management.

Abroad studies:

1. Vinchin and Igel (2009) presented an article entitled "Total Quality Management and Supply Chain Management: Similarities and Differences". The aim of this paper is a comprehensive study of contrasts and comparing differences and similarities between total quality management and supply chain management. This paper presents a broad overview of core concepts of total quality management and supply chain management in research literature and compares goals and integration of these concepts from different perspectives. The findings show that they have different start points and primary goals that can be complex in Integrative implementation. Total quality management focuses on domestic partnership (employees) and supply chain

management focuses on foreign participation (business partner), but both need to emphasize on internal and external partnership.

2. Ramos *et al* (2007) presented an article entitled "The benefits of using quality management techniques in order to support supply chain management". This paper examines that combination of quality management and supply chain management has many advantages. To date, researchers examined critical factors of quality management and their effects on the supply chain performance and process in their studies. However, there are evidences that show benefits of quality management technique support supply chain management. This paper examines these evidences.

3. Kenan and Tan (2005) presented an article entitled "Total Quality Management, Supply Chain Management: Understanding relationships and their effects on work performance". In recent years, many methods have been proposed to improve operations. Especially JIT, supply chain management and quality management have attracted special attention. As long as these 3 theories are implemented, it seems that they are independent and can also be used as 3 branches of integrated operational strategy. This paper examines empirically the relationship between JIT, supply chain management and quality management and shows how they affect our work performance. The results show that at strategic and operational levels, the relationship between taking into account JIT, total quality management and supply chain management by organization is as part of executive policy. The results also show that the commitment to quality and understanding of supply chain dynamics has the greatest effect on our performance.

4. Li and Wang (2005) present in an article entitled "Supply chain security with lower cost: lessons from total quality management": supply chain security became one of the main concerns of public and private sector after September 11th incident in 2001. Before September 11th, concerns of supply chain was related to theft and reduced drug trafficking, illegal immigrants and export of stolen goods but the threat of terrorist attacks was increased after that incident, and the need to ensure security of supply chain was increased. This paper examines the way of using TQM components for design and operation of processes to ensure the security of supply chain. The main theme of quality movement can be implemented on supply chain security: "higher quality can be made with lower cost by operational planning and proper management". This can be achieved using appropriate management approach, new technologies and re-engineering of operational processes.

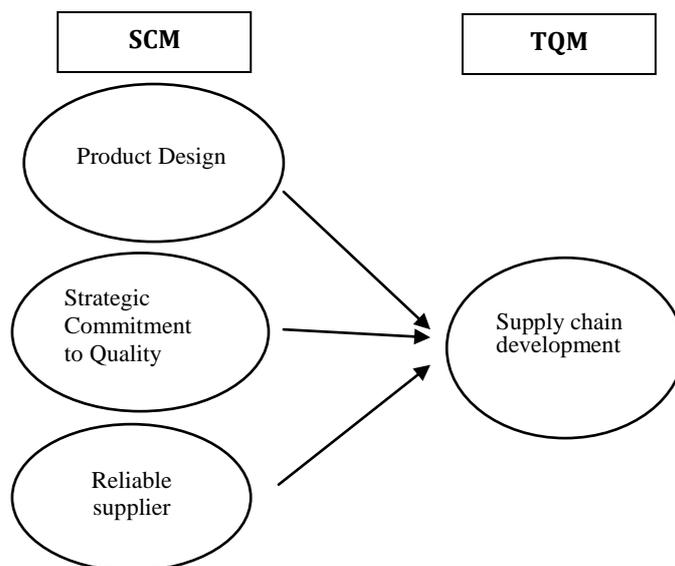


Fig. 2: Conceptual model of study [15]

Research hypotheses:

1. Product design effects significantly on supply chain development.
2. Strategic commitment to quality effects significantly on supply chain development.
3. Reliable supplier effects significantly on supply chain development

Methods:

This study is an applied research in terms of aim. The descriptive research is survey in terms of implementation, is qualified research in terms of data type and is non- experimental in terms of control. Initial research model is as follows.

The statistical population of study includes all automotive companies listed in Stock Exchange. The main data collection tool of study will be questionnaires. The statistical sample is chosen by census among all 34

listed companies. Questionnaire is distributed among 3 experts or specialists in research and development of aforementioned companies that are totally 102 questionnaires.

The structural equation modeling is used in this study which is calculated using LISREL software. Structural equation modeling is a very general and powerful multivariate analysis technique from multivariate regression family and in other words, it is expanded form of "general linear model" that enables researchers to test a series of regression equations simultaneously [16].

Data analysis:

Providing Structural Equation Model:

We can estimate and test our conceptual model through structural equation modeling (SEM) after securing relatively the acceptability of variables. SEM approach is a holistic approach to test hypotheses about relationships between observed variables and latent variables. In this research, product design variables, strategic commitment to quality, reliable supplier and development of supply chain are considered as 4 latent variables of model and remaining variables are obvious variables. The relationship between variables under study can be shown as structural equations based on proposed model:

Structural equation for main hypotheses of research:

$$tose\ zanjire\ tamin = \alpha_1 Tarahi\ mahsol + \alpha_2 Taahod\ stratejic + \alpha_3\ ghabeliat\ taminkonand$$

Structural equation model is fitted between variables in order to test the hypotheses and results of path analysis are given in order to determine the appropriateness of path analysis model consisting Chi-squared test and model in Table 1.

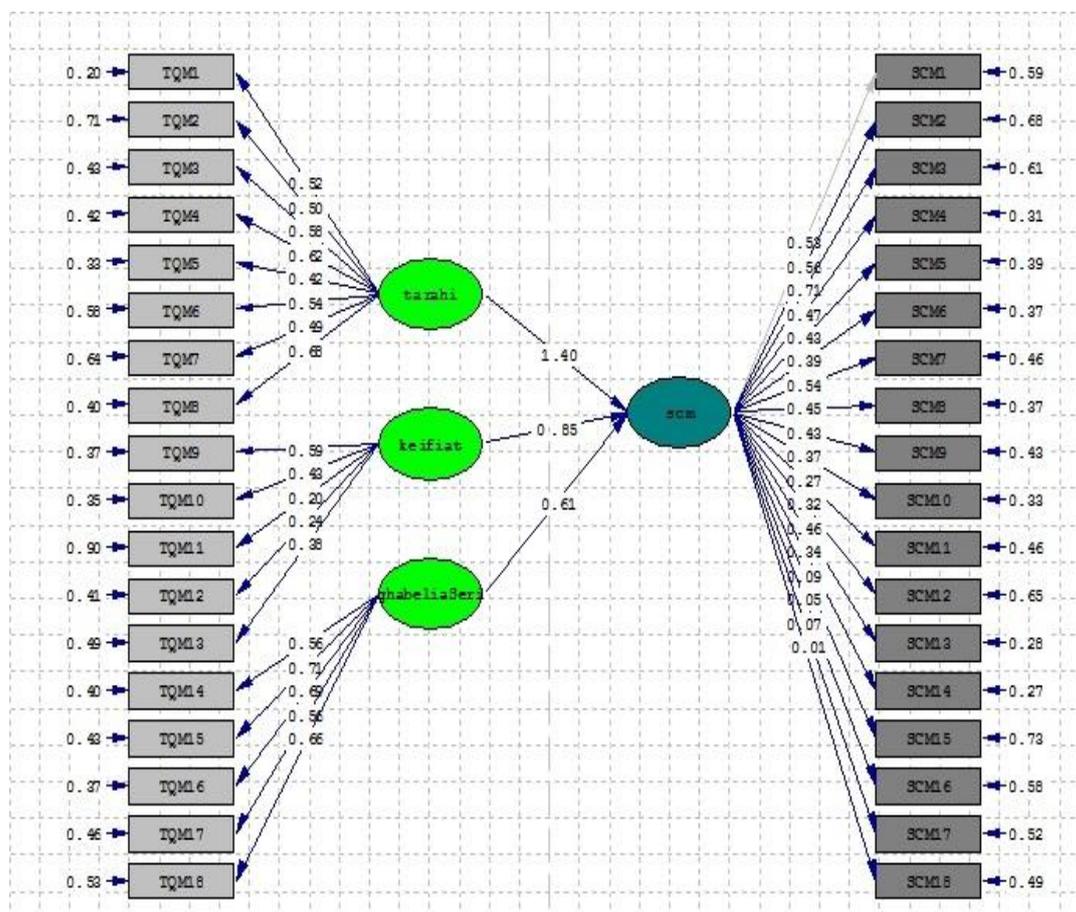


Fig. 3: Fitting the research path in standard estimation of model.

Table 1: Path Analysis.

RMR	NNFI	NFI	AGFI	GFI	RMSEA	χ^2/df	Df	χ^2	model
0.039	0.90	0.90	0.95	0.92	0.066	2.79	261	754.171	Study model

Model fitness indices in Figure 3 show that model is a good model. According to the fact that ratio of chi-square to degrees of freedom (2.89) is at desired interval of one and five. Relative or normal Chi-square (NC) that is calculated through dividing chi-square by degrees of freedom is a general index in calculating fitness indices. Schumacher and Lomeks (2009), accept values between one and five for this indicator. Model RMSEA value of 0.066 is less than 0.08. RMR value is root mean square residual that is less than 0.05. Fitness indices of GFI and AGFI are higher than 90% and fitness indices of NFI and NNFI are also higher than 90% that are desired values. So we can say that structural equation model is appropriate model. Below we analyze the relationship between research hypotheses:

Path coefficient analysis

In this section, model 1 is examined using t-statistic estimate at significance level of 95% and path coefficient.

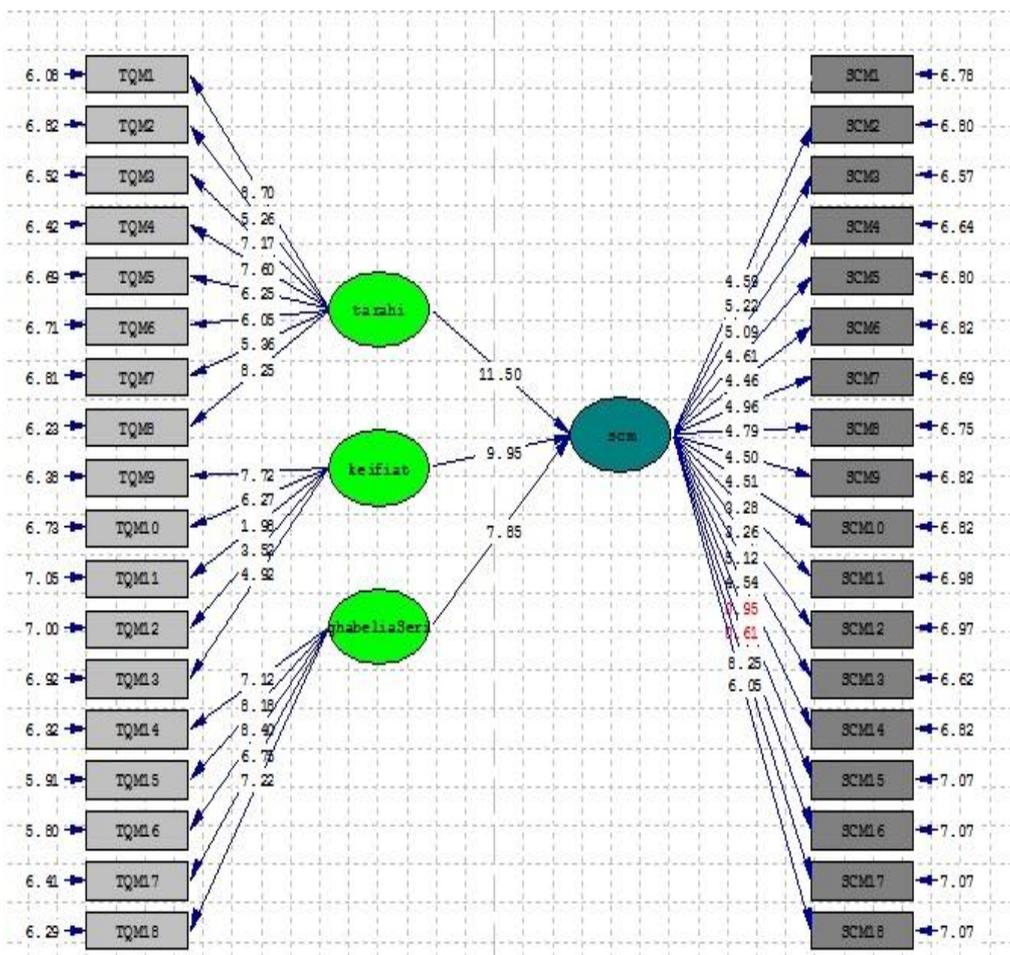


Fig. 4: T-statistics of relationship between latent variables.

According to T-statistic of above figure, it can be said that TQM variables effect directly and significantly on supply chain management. In both sectors, path coefficient of 0.05 and significance level of 0.000 are equal. Due to significance level that is less than 0.05, the null hypothesis is rejected and opposite hypothesis is accepted with 95% confidence that is the relationship between variables. The research hypotheses are confirmed.

Table 2: Results of t-statistic

Hypotheses	Variables	Path coefficient	t-statistics	Sig	Significance level	Results
Hypothesis 1	Product design → supply chain development	1.40	11.50	0.000	0.05	Verified
Hypothesis 2	Strategic commitment → supply chain development	0.85	9.95	0.000	0.05	Verified
Hypothesis 3	Reliable supplier → supply chain development	0.05	7.85	0.000	0.05	Verified

tose zanjire tamin = 1.4 Tarahi mahsol + 0.85 Taahod stratejic + 0.61 ghabeliat taminkonand

The results

The results of structural equation fitness

Fitness indicators show the fitness of first model in order to measure the relationship between variables of total quality management and supply chain development including normal or relative chi-square (NC) of 2.89 that is in range of one to five, RMSEA value equal to 0.066, RMR value equal to 0.039 that is less than 0.05 and values above 90% of GFI, AGFI, NFI, NNFI indices show the model utility.

Results of Hypotheses:

In H1, according to significance level of less than 0.05 and t-value greater than 1.96, it can be deduced that null hypothesis is rejected and opposite hypothesis is accepted, that is "Product design has a significant positive effect on supply chain development". So, there is a significant and positive relationship between product design and supply chain development of automotive companies listed in stock exchange. In other words, supply chain development will be increased through strengthening and enhancing the quality of product design, because product design is important element of product marketing and customers consider its design in the first glance. As the results show, considering product design results in supply chain development and consuming more and stronger suppliers.

In H2, according to significance level of less than 0.05 and t-value greater than 1.96, it can be deduced that null hypothesis is rejected and opposite hypothesis is accepted, that is "Strategic commitment effects significantly and positively on supply chain development and quality". So, there is a significant and positive relationship between supply chain development and quality of automotive companies listed in stock exchange. In other words, supply chain development will be increased through strengthening and enhancing the strategic commitment to quality, because strategic commitment to quality is important element of quality. The quality is the main factor that creates value for customer and therefore leads to more attention and of supply chain development.

In H3, according to significance level of less than 0.05 and t-value greater than 1.96, it can be deduced that null hypothesis is rejected and opposite hypothesis is accepted that is "reliable supplier has a significant positive effect on supply chain development". So, there is a significant and positive relationship between reliable supplier and supply chain development of automotive companies listed in stock exchange. In other words, supply chain development will be increased through strengthening and enhancing reliable supplier, because reliable supplier leads to development of suppliers' family chain and raise production and distribution and provides competitive advantage for companies.

The product design of 1.4, strategic commitment to quality of 0.85 and reliable supplier of 0.61 have the highest influence among total quality management factors.

REFERENCES

- [1] Alwani, SM., R. Behruz, 2003. assessment of services quality in public sector, First Edition, Tehran, Iran Industrial Research and Education Center.
- [2] Asghari Zadeh, E., M. Momeni, A. Ghasemi, 2010. Developing indicators of supply chain performance through modeling the European model of quality management (case study: Shahrvand Chain stores. *change management research*, 2(3).
- [3] Azar, A., A. Ahmadi Kohan, 2008. Model development for explaining the relationship between quality management enablers in supply chain- with structural equation modeling (SEM) approach. *Journal of Iran Management Sciences*, 9(36): 19-42.
- [4] Azar, A., M. Mohammadlou, 2000. Designing service quality model in supply chain: explaining interactive services concept. *Business Management perspective*, 34(6): 23-41.
- [5] Baha, A., 2009. Examining the relations between information sharing components, competitive strategies and supply chain performance in organization" Automotive. *Journal of supply chain*, 16(5).
- [6] Bandyopad, J., D. Sprague, 2003. Total quality management in an automotive supply chain in the United States. *International journal of management*, 9(3).
- [7] Besterfield, D.H, 1999. Total Quality Management. Second edition, Prentice Hall.
- [8] Farsijani, H., A. Fallah Hosseini, 2012. Identify and prioritize the factors affecting supply chain management access to world-class and provide appropriate solutions. *Industrial management perspective*, 6: 25-44.
- [9] Garvin, D.A., 1978. Leveraging Processes for Strategic Advantage. *Harvard Business Review*, 62: 109.
- [10] Haji Sharif, M., 1997. TQM comprehensive quality management system. First Edition, Tehran, Ramin publication

- [11] Heidari Qara Bulagh, H., 2009. Detection and diagnosis of Supply Chain Management. *Management Journal*, 5(14): 1-11.
- [12] Hall, R., 1999. Word-class manufacturing. *Industry week*, 2(13): 3.
- [13] Holmberg, S., 2012. A System Perspective on supply chain measurement. *International journal of Physical Distribution & Logistics management*, 3(1).
- [14] Jain, K.C., 2000. Quality Assurance and TQM. India Delhi: Khanna pub.
- [15] Kannan, V., K. Tan, 2005. Just in time, total quality management, and supply chain management: understanding their linkages and impact on business performance, 33(2): 153-162.
- [16] Kelemen Michaela, L., 2003. Managing quality. SAGE publications ,London
- [17] Lee, H., S. Whang, 2005. Higher supply chain security with lower cost: Lessons from total quality management. *International Journal of Production Economics*, 96(3): 289-300.
- [18] Mahdavi, M., S.G.R. Jalali Naini, 2010. A model for determining the level of commitment and adoption of total quality management (case study on suppliers Structure Gostar Saipa). *Industrial Management*, 4(2): 162-143.
- [19] Mckee, M., 2001. Role of hospital in a changing environment. *Bulletin of WHOM*, 78: 802-7.
- [20] Movahedi, M.M., M. Yahya Pur, 2000. Studying barriers and approaches in order to establish a comprehensive quality management system Case study: (Mazandaran Cement Company (Neka). the researcher of management, 7(19): 104-112.
- [21] Ramos, J., S. Asan, J. Majetic, 2007. Benefits of applying quality management techniques to support supply chain management. International Logistics and Supply Chain Congress', Istanbul.
- [22] Riahi, B., 2002. Total quality management in public sector (government). First Edition, Tehran, Publications and Research Center of Iran
- [23] Samii Neiestani, A., H. Farsijani, A. Abolhasani, 2000. Explaining the effects of total quality management on organizational performance in research and development areas (the mining case: producing companies of central province). *Industrial Management*, 14(5): 75-88.
- [24] Shafii, M., P. Tarmst, 2014. The effects of supply chain management processes on competitive advantage and organizational performance (Case study of SAPCO). *Quantitative studies on management*, 15(2): 105-124.
- [25] Sitkin, S.B., K.M. Sutcliffe, R.G. Shroeder, 1994. Distinguishing control from learning total quality management: a contingency approach.
- [26] Tabibi, M., N. Mazlumi, 2009. A model for analysis, selection and implementation of business supply chain strategy. *Iran Management Science*, 4(16): 139-154.
- [27] Vanichchinchai, A., B. Igel, 2009. Total quality management and supply chain management: similarities and differences. *The TQM magazine*, 21(3): 249-260.