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Studying and Prioritization of Mediating Factors of Market-Orientation in Supply Chain Performance using TOPSIS Technique

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A B S T R A C T

The present study aimed to explore the role of mediating factors of market orientation with regard to supply chain performance to help the firms achieve high levels of performance via identification of mediating factors of market orientation effective on supply chain performance and determining their degree of importance. The statistical population included all managers and experts of the purchasing, business and selling sector of Reef Iran Chemical and Industrial Group among whom 85 persons were selected as the statistical sample. The obtained results disclosed that mediating factors of market orientation including decentralization, formalization, control system, inter-sectoral coordination, senior managers' support and reward system have a significant relation with supply chain performance. According to results of regression test, control system and decentralization are more effective than other factors in supply chain cycle. This shows that they have a positive effect on marketing, market-oriented behavior and supply chain performance of firms.

1. Introduction

In the modern business world, manufacturers are faced with ever-increasing pressures of customers' demands regarding customization of products, quality improvement and rapid

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responsiveness to their needs. In the 1990's, managers of many industries perceived that improving the domestic processes and flexibility in capabilities of the organization are not adequate to continue their presence in the market; rather suppliers and distributors should have a close relation with development policies of the manufacturing market. Despite the fact that marketing is the basis of marketing task, little attention has been paid to how it is deployed in organizations. Market orientation in traditional sense is deployment of the concept of marketing inside an organization; therefore, acts of a market-oriented organization are proportional to the concept of marketing. Any organization such as big companies, governmental companies or small businesses wants to satisfy demands of different customers and shareholders. Hence, they need materials, equipment's, facilities and suppliers from other organizations and performance of an organization is affected by activities of other organizations which create the supply chain. Efficiency of any organization is the result of management performance and structure of its supply chain. Survival of modern organizations is possible through understanding the needs of customers and responding rapidly to them. Supply chain includes all activities related to exchange of products and services from the stage of raw materials to that of the end product. This process contains the information and financial flow besides the materials flow (Wong et al., 2009).

Success of the companies and firms depends on more recognition of customers, competitors and other effective factors on the market. Needs and demands of customers are always changing and an organization can be successful only if these changes are recognized. On the other hand, competitors want to attract more customers and they will not relinquish any attempt in this regard. Also, changing of market conditions and the governing rules like technological changes, rules and so on can affect success of organizations in a market. Recognition and prediction of such factors and offering appropriate strategy in dealing with them play a key role in success of organizations in the target market. Thus, tendency towards the market and customers' needs is the first characteristic of modern marketing. Marketing theoreticians like Narver and Stanley (1990), Ginner and Pandani (2005) and Carr and Lopez (2007) believe that market orientation roots in the concept of market and it has had some effects on total business strategy. Market orientation either as a culture or as a behavior cannot be appeared without organizational commitment and not only high level managers but also employees should have this commitment (Subramanian et al., 2010). Dynamism in business environments that is due to factors such as economic growth or collapse, intensity of competition, globalization, merging and technological innovations has challenged the capability of high level managers in timely understanding and accurate responding to these changes. Inability in timely understanding of changes and responding rapidly to them is led to decline of companies. Similarly, increasing the importance of service sector has created increasing changes in how to compete and respond to customers' needs. Entanglement and increasing of the determining forces and factors in the market, presence of several powerful competitors as well as uninterrupted and permanent change of customers' preferences and increased level of their expectations have encountered service organizations with deep challenges and risks. Market orientation is a concept that eliminates these challenges; since on the one hand, it focuses on collection of data about needs of customers and capabilities of competitors and on the other hand, it creates the highest value for customers via utilization of other resources of the organization and integration of inter-organizational sectors (Awwad et al., 2011). It is tried in the current study to explore enhanced supply chain performance from the perspective of one of the effective factors, i.e. mediating factors of market orientation and explain its relation with performance. Therefore, mediating factors of market orientation in supply chain performance as well as the effect of these factors on development and improvement of supply chain performance are explored. Similarly, the purpose of the current study is to explore the relation between centralization, formalization, inter-sectoral coordination, senior managers' support, reward system and control system with supply chain performance.In the following, the literature review and research background are presented. Then methodology and analysis of results are mentioned. Finally, conclusions and suggestions are proposed in the last section.

2. Theoretical Principles and Research Background

In a survey entitled market orientation and business performance, Rojas (2004) acknowledged that "Narver and Slater's study in 1990 is one of the first studies proposed about the relation between market orientation and performance". This study was based on 113 business units of a limited company related to United States Forest Service and was the first study used to measure market orientation via the scale they developed. Specially, they perceived a positive relation between return on investment and market orientation. Noble et al (2002) used Narver and Slater's index in their research that was done in retail industry. Shareholders were their respondents and they considered four business firms in the industry sector during a ten-year period. However, their results indicated poor mixed results. Specifically, they just found out a considerable relation between competitor orientation as a dimension of market orientation (based on a definition from Narver and Slater) with return on investment and increased sales. They concluded that the resources in that industry to confront threats of competitors were determining factors of performance of the business firm. Merlo et al (2009) explored the relation between market orientation, role of entrepreneurship and influence of the secondary unit of marketing with business performance in 600 large and medium manufacturing firms in Australia. Market orientation was measured via MKTOR standard and business performance was evaluated using measures such as cash flow, sales volume, market share, revenue, and profitability. Analysis of research data revealed that there is a little relation between market orientation and role of entrepreneurship with business performance. Subramanian (2010) explored the relation between market orientation and business performance in 159 special care hospitals in America. The structured scale of business performance with measures of income growth, return on investment and profit margin were used to measure market orientation. Results of testing the hypotheses showed that there is a positive relation between market orientation and business performance in the above hospitals. Tsiotsou (2010) explored the relation between market orientation and service performance in 329 tourism industries in Greece and Lithuania. In order to measure market orientation performance, service measure was used given to service quality and service diversification. Results of testing the hypotheses indicated that there is a direct relation between customer orientation and service performance and an indirect relation between competition orientation and inter-sectoral coordination with service performance. Molahosseini and Nikseresht (2008) carried out a research on the relation between market orientation and performance in Bimeh Asia agencies in Kerman province. The relation between market orientation and performance in Bimeh Asia agencies was tested empirically in this research. The market orientation scale specially designed for the service sector was used. The research was carried out through field study and questionnaire was tool of data collection. Analysis of factors revealed that there are four hidden dimensions in market orientation: customer orientation, competitor orientation, sectoral responsiveness, and attitude towards customer satisfaction. According to the findings, customer orientation and attitude towards customer satisfaction have a very stronger effect on performance than other dimensions and competitor orientation has a lower effect on performance. Moreover, organizational responsiveness has an intangible relation with performance. Divandari et al (2009) carried out comprehensive studies about market orientation and business performance in Iran. Results of this study show direct and indirect relations (through value creation) between market orientation and business performance. In order to evaluate the conceptual model, opinions of 50 experts were received and analyzed by a questionnaire (including open and closed questions). Content analysis method (Shannon Entropy) was used to analyze the data about open questions and binominal test (for independent importance) and Friedman test (for relative importance) were used to analyze the data about closed questions. Findings revealed that the whole conceptual model of market orientation and business performance in Iran can be confirmed with some modifications according to the experts. All components of the model are important independently. With regard to relative importance, three factors of market orientation, value creation and business performance are equally important. Relative importance of market orientation components is (1) strategic response and action, (2) coordinated sectors and systems and (3) intelligent culture and behavior. Relative importance of value creation components is (1) conceptual value of customer from the firm, (2) conceptual value of the market from the firm, (3) conceptual value of competitors and (4) conceptual value of the firm. Relative importance of business performance components is (1) firm's performance against the customer, (2) firm's performance against the market, (3) competitive performance (against the competitor) and (4) internal performance of the firm.

2.1. Supply Chain

Supply chains contain all firms and activities required by businesses for designing, construction, delivery and utilization of a product or service. Any business relies on its supply chains for survival and progress and plays a role in each chain. Different definitions have already been proposed about supply chain. It involves a network of participants and different operational channels inside and outside the organization that are effective on desirability of supply chain outputs. A supply chain includes two or more organizations that are separate legally and are related via materials, information and financial flows. These organizations can produce the parts, ingredients and end products and also they include providers of logistics services and the end consumer. Supply chain is a network of upstream and downstream organizations that are involved in different activities and processes which create value in the form of products and services for the end consumer. This definition emphasizes paying attention to satisfaction of customers' needs in all activities of supply chain (Kodali et al., 2010). Cox (1999) defined supply chain as follows: First, processes which connect the customer to suppliers from raw materials to end consumption of the finished product and second, sum of tasks inside and outside of the organization that activate the value chain in order to create products and offer services to customers. According to the definition of supply chain committee (1997), supply chain includes all attempts for production and delivery of the end product from suppliers to customers (Lummus et al., 1999). It is a network that contains all activities related to flow of products from raw materials preparation to end product delivery to the consumer. Besides the commodity flow, there are two other flows, i.e. the information flow and financial resources and credits flow. Accordingly, supply chain management focuses on integration of supply chain activities as well as the information flows associated with them via improving the chain relations to achieve a permanent and reliable competitive advantage (Tummala et al., 2006).

2.2. Supply Chain Management

Decreased life cycle of products, increased competition and variable needs of customers have been led to change in the traditional approach of logistics management to modern management of supply chain. In the modern industrial world, any action to decrease production costs is an efficient attempt. Supply chain management is one of the effective approaches that decreases the production cost and waiting time. There are numerous definitions about supply chain management that relatively all of them include coordination of production, inventory, transportation, and knowledge information among the elements of a supply chain to obtain the best possible combination of responsiveness and efficiency for a market that feeds it (Wong et al., 2009).

2.3. Supply Chain Performance

Improving supply chain performance is one of the most important topics for those organizations that intend to achieve competitive advantage. Cai et al (2009) proposed a model by emphasizing a systematic method to improve key performance indexes and implementation of it in supply chain. This model can identify the determining costs in implementing key performance indexes and offer performance improvement strategies for decision-makers in a supply chain. To describe how the model is used, these researchers discussed about a big retailer company (Cai et al., 2009). Thakkar et al integrated the prominent characteristics of balanced score card and the general model of supply chain operations to propose a comprehensive model and measure performance of small and medium enterprises. They introduced a group of performance indexes for supply chain processes such as "resource", "structure" and "delivery" in small and medium enterprises. These indexes explain measures in different stages of supply chain such as purchasing, manufacturing, replenishment and customers' orders. Having proposed a comprehensive model, they suggested general instructions about implementation and utilization of the above framework for supply chain assessment and planning in small and medium enterprises (Thakkar et al., 2009). Bhatnagar and S.sohal carried out a study on supply chain competitiveness. They believe that supply chain performance is affected by several factors that begin with production positioning (Bhatnagar et al., 2005).

2.4. Market Orientation

The idea of market orientation can be traced back at the beginning of the 1950's when Peter Drucker (1954) considered the customer as a basis for organizations and believed that it is essential for their survival. Levit (1960) supported Drucker's statements and seriously believed that satisfying customers' needs should be the major purpose of business firms. Later on, other researchers developed this idea referred to as the term marketing. Since then, many scholars and managers considered this customer-oriented business philosophy as an inseparable element of their daily management . Despite the fact that extensive studies have been carried out in this regard, there is still no agreement on the real nature of market orientation and it is regarded as a cultural and behavioral field or a combination of both (Olavarrieta et al., 2008). Many definitions of market orientation have been obtained through field studies, for instance, Deshpandé et al (1993) define market orientation as a kind of organizational culture that includes a set of common beliefs and values about the customer among organizational members and believe that customer is the major factor in business planning (Deshpandé et al., 1993). Narver et al (1990), also, define market orientation as a kind of organizational culture with the difference that they went beyond it and introduced market-oriented firms as both customer-oriented and competitor-oriented firms. Narver and Slater stated that competitor orientation is as important as customer orientation for a firm. Also, they stressed the importance of inter-sectoral coordination. Inter-sectoral coordination is harmonization of all operational units to realize purposes of the organization (Narver et al, 1990). In contrast, Deshpandé et al (1993) suggested that market orientation is a group of inter-sectoral activities and processes that customers' satisfaction is fulfilled via permanent evaluation of their needs. Generally, they did not emphasize competitor orientation.

Kohli and Jaworski (1990) performed various field studies in the scope of marketing. These two scholars suggested that market orientation is a factor to establish the concept of marketing in an organization. They defined market orientation as a group of behaviors or activities related to establishment of market intelligence, dissemination of it among various units of the organization and responsiveness. Kohli and Jaworski emphasized behavioral aspects of market orientation but they did not suggest market orientation as an aspect of organizational culture. Unlike Kohli and Jaworski, Hunt et al (1995) did not consider market orientation as a factor to establish the concept of marketing; rather, they believed that it completes the marketing viewpoint. According to Hunt and Morgan's viewpoint, market orientation includes systematic collection of information about the current and future customers and competitors, systematic analysis of information to develop market knowledge, systematic utilization of this knowledge to identify, understand, establish, select, deploy and change the firm's strategy. Their definition emphasized customer orientation and competitor orientation and nothing was mentioned about inter-sectoral coordination (Hunt et al, 1995). Similarly, Kohli and Jaworski studied marketing literature and suggested that there are three basic concepts in marketing viewpoint: 1) customer orientation, 2) harmonized marketing and 3) profitability. Then, they interviewed with 62 marketing and non-marketing managers of American companies and concluded that profitability is the result of market orientation not one of its elements. At last, they defined market orientation as follows: Market orientation is the holistic attempt of the organization to establish market intelligence about current and future needs of customers, dissemination of this intelligence and awareness among different sectors of the organization and responsiveness of all organizational units to it. Their model is as the following:

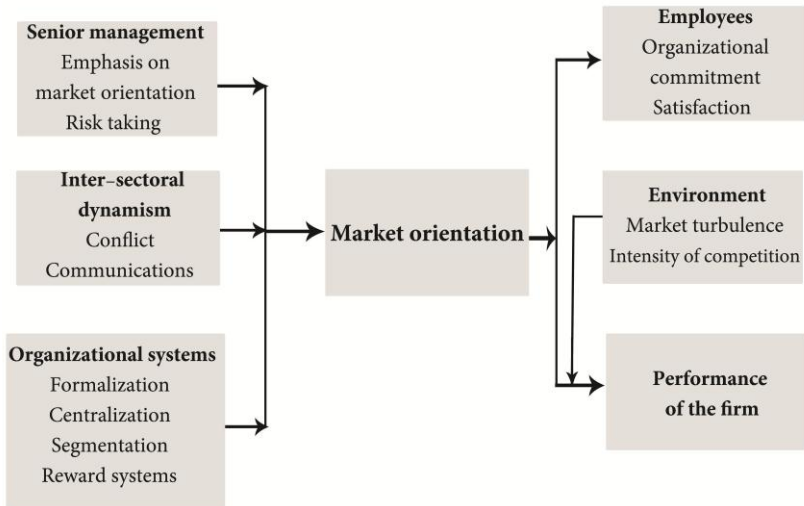

Figure 1. Conceptual framework of market orientation-Kohli et al. (1990)

Narver and Slater (1990) reviewed marketing and strategic management literature comprehensively and defined market orientation composed of three behavioral elements: customer orientation, competitor orientation and inter-sectoral coordination. According to their findings, these elements are equally important in market orientation. Their model of market orientation is as follows:

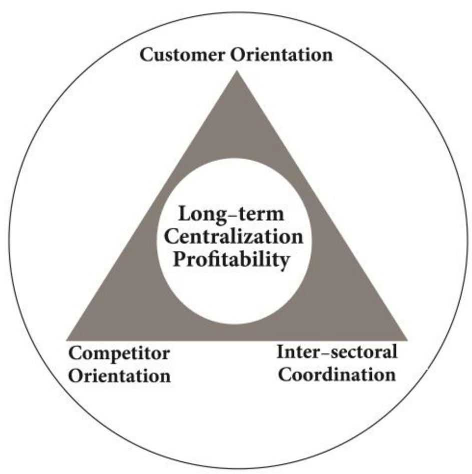

Figure 2. Narver et al's market orientation model (1990)

2.5. Market Orientation and Supply Chain Performance

The firms interact with suppliers and customers regarding materials flow and quality issues, they can expect better time-related operational performances in terms of speed and delivery punctuality. Effective supply chain management involves a marketing orientation and cost reduction which improves the firm's financial performance (Tukamuhabwa et al, 2011).

Green et al; (2006) while analyzing the study by Elmuti (2002) on the relationship between supply chain management and perceived organizational success revealed that suboptimal performance in the area of supply chain management could be due to a weak marketing orientation. The results from the study by Cervera et al; (2001) show that, every single component of a market orientation is significantly and positively correlated with global performance. Lee et al (2007) found out that firm's internal integration, integration with suppliers and customers have positive impact on supply chain performance. Ellinger et al., (2000) as cited by Ju¨ttner et al; (2010) indicated that inter functional coordination has a positive effect on customer service-related performance. Ju¨ttner et al; (2010) proposed a model linking marketing and supply chain management integration with shareholder value. The model indicated that supplier and customer relationships which are components of market orientation influence supply chain performance in terms of shorter end to end pipe line time, total supply chain costs and shorter lead time.

2.6. Market Orientation and Supply Chain Management Strategy

As cited by Ju¨ttner et al; (2010), Mentzer et al. (2008) argued that supply chain strategies depend on a close interaction with in-company marketing and sales resources, processes and skills. Wisner (2003) used structural equation modeling in developing and analyzing a theoretical framework for supplier management and customer relationship strategies, supply chain management strategy, and firm performance. The study revealed that supply chain management strategy dimensions include, creating a greater level of trust throughout the supply chain, identifying and participating in additional supply chains, establishing more frequent contact with supply chain Members, creating a compatible supply chain communication and involving all supply chain members in your firm‟ s product/service marketing plans. It was established that supplier management and customer relationship strategy which are consistent with the market orientation have a positive impact on supply chain management strategy. A study carried out by Green et al; (2006) also revealed that the marketing orientation factors relate positively and significantly to supply chain management strategy. Min and Mentzer (2000) in their theoretical study on the role of marketing in supply chain management argued that the marketing orientation plays a fundamental role in implementing supply chain management.

2.7. Market Orientation and Supply Chain Management Strategy and Supply Chain Performance

Wisner, (2003) gave examples of activities that strengthen the supply chain management strategy of a firm. These include creation of a greater level of trust among supply chain members, establishing more frequent contacts with supply chain members, creation of a seamless communication capability among supply chain members, and involving other supply chain members in development of the firm‟ s marketing plans. Keah (2002) as cited by Green et al; (2006) examined contemporary practices and concerns of supply chain management. He concluded that efficient and effective supply chain management positively impacts product quality, customer service, and competitive position of a firm. Green et al; (2006) contended that supply chain management strategy correlates positively and significantly with market performance. Wisner (2003) also found out that supply chain management strategy influences firm performance. Park and Hartley (2002) as cited by Green et al; (2006) indicated that the supply chain practices of first tier suppliers affect the performance of second-tier suppliers, supporting the view that supply chain best practice should propagate back through the entire supply chain to improve overall supply chain performance. Roh, (2008) stipulates that supply chain management is important for successful supply chain outcomes.

Hurley and Hult (1998) stated that research on market orientation and performance should reframe existing models to more directly incorporate innovation. According to Low et al; (2007), high levels of market orientation lead to high levels of innovativeness within a firm. Research conducted by Lin et al (2010) found out that Customer Relationship Management(component of market orientation) is considered as critical in improving a firm's innovation in all dimensions of product innovation, process innovation, administrative innovation, marketing innovation and service innovation. Both innovation and market orientation have been linked to higher firm performance. Vieira (2010) also showed that market orientation is positively related to innovation. Low et al; (2007) also added that innovation, or at least the firm's capacity to innovate, has a relationship with firm performance. Innovation capability refers to the implementation or creation of technology as applied to systems, policies, programs, products, processes, devices, or services that are new to an organization (Chang and Lee, 2008). Grinstein (2008) stated that market orientation is positively related to innovation consequences. Hurley and Hult (1998) reiterated that innovative capacity help firms gain their competitive advantage and improve their performance. As cited by Lee et al; (2011), Stundza, (2009) stated that supply chain innovation brings about supply chain efficiency including reduced lead time, new operation strategies, reduction in cost, provision of consistent quality, and development of flexibility for dealing with rapid changes in the business environment. Supply chain innovation therefore improves supply chain performance dimensions.

2.8. Mediating Factors of Market Orientation

2.8.1. Decentralization

Decentralization illustrates the hierarchy of authorities and degree of individual participation in decision making processes of the organization. This enhances the participant's perception and commitment about the process of change and helps the employees convert decisions into more specific acts and this strengthen them. Decentralization disperses responsibility downward and shows the focus and extent of authority that independence of decision making is centered inside the organization. As decentralization enhances decision-making to the lowest levels which have the ability to make reasonable decisions, it improves commitment, spirit of partnership and motivation. Decentralization refers to limited transfer of decision making authority in an organization that has a negative effect on market orientation, because it indicates dissemination and application of the information of a business firm. In contrast, it develops the opinions and initiatives of lower level members and helps them process the information. Basically, decentralization is resulted in participation which is led to employee satisfaction and in return, it enhances productivity. This is consistent with what is essential for a business firm to be market-oriented. The negative relation between centralization and market orientation that was perceived by Kohli and Jaworski indicates that probably "empowerment" of employees for decision making at the lowest level of organizational capability is helpful than being concentrated at high levels (Green et al., 2005). Therefore, interests of those who implement decisions are effective in decision making too. Owing to employees' participation in the process of decision making, lack of centralization in decision making brings about motivation. Professional employees show more sensitivity to participation in decisions that are related to manner of their affairs. If the management in an organization values human values, it most probably demands lack of centralization (Merlo et al., 2009).

2.8.2. Formalization

Formalization refers to the degree that rules define the roles, power relations, communications, norms and procedures. It is used due to the advantages that organizations enjoy as a result of standardization of employees' behavior. Standardization of behavior decreases changeability. Also, it increases coordination. Economic benefits obtained from formalization should not be exaggerated. More formalization demands freedom of action by the job holder. This seems true, because freedom of action is cost intensive. Specialized judgments of job holders are used more in lower formalized jobs. The power of judgment and accurate diagnosis are rare qualities and organizations pay higher benefits in the form of wage to employ the personnel who have such capabilities. Formalization shows the structure of rules and methods in doing organizational activities and is measured via guide to the rules and job description or the existing freedom for organizational members (Tsiotsou, 2010).

2.8.3. Control System

Formalization and control system reduce innovative aspects of market-oriented culture considerably; in return, they will have a positive effect on implementation of marketing and reinforce market-oriented behaviors. When senior management guarantees lower emphasis on employees' control, an organization can be more market-oriented. In a market-oriented organization, marketing employees have more power than those of other sectors. Also, it can be expected that the accounting unit has more power in organizations which rely highly on financial information. High separation is led to problems in coordination and control. Thus, the management prefers that all factors be in a similar status in terms of low complexity (Narver et al., 1990).

2.8.4. Inter-sectoral Coordination

Inter-sectoral coordination is dissemination of information related to customers and competitors among all people and sectors of the organization in order to create an accurate insight about customers' needs and demands and overcome in competition. Similarly, it emphasizes employees' role in market orientation development that all employees have potential to offer value to the customer and inter-sectoral coordination is essential to fulfill it. Generally, the following issues must be considered in inter-sectoral coordination: cross-functional correlation in devising strategy, sharing of resources with other units of the organization, dissemination of information among all units, and coordination of all activities for value creation for the customer. Inter-sectoral coordination is based on customer and competitor's information and is composed of coordinated attempts of the organization beyond the marketing sector to create superior value for customers (ibid.). Inter-sectoral factors include inter-sectoral connection and conflict. Inter-sectoral connection or degree of formal and informal relations among the employees in different sectors enhances market orientation and is led to more application and sharing of information. It facilitates dissemination of information and responding to market information and thus increases market orientation. This connection at the center of customer circumstances and performance feedback from customers in gaining such inter-sectoral coordination is led to customer orientation. Inter-sectoral conflict is tension among the sectors that is due to dissimilar purposes and shows cumulative and shared reactions to market needs and as a result, destroys market orientation. The studies reveal that inter-sectoral conflict as a deterrent of market orientation probably prevents relations among the sectors. Thereby, it decreases dissemination of market information. This tension among sectors probably prevents reactions of these sectors to market needs and hence disturbs market orientation (Kohli et al., 1990).

2.8.5. Senior Managers' Support

Senior managers create values and orientation of an organization. Emphasis of the senior management on market orientation has a positive effect on market orientation level of the organization. Commitment of senior management accompanied by willingness of organizations to adapt with changes essential to enhance market orientation and undertake it is helpful. Besides, reinforcement of the importance of market orientation by senior management probably encourages the organizational members to explore the environment, follow changeable markets, share market information with others in the organization and respond to market needs. Market orientation can be executed effectively even in organizations with centralized decision making structures by assuring the emphasis of senior management (ibid.).

2.8.6. Reward System

Market-based reward systems are measures to reward employees who have been motivated and thus it enhances market orientation. Market orientation can be executed effectively even in organizations with centralized decision making structures via senior management emphasis and guarantee, inter-sectoral connection and suitable reward systems. Managers can improve market orientation of their firm through developing the reward systems and motivation for rewarding to market-oriented behaviors of employees. Reward systems have the capability to provide incentives for implementation, execution and looking for creative solutions. Role of market-based reward systems in enhancement of market orientation is remarkable and illustrates that these systems must consider role of people in understanding of market needs and responding to them (Narver et al., 1990).

Hence, theoretical framework of the study including seven hypotheses was proposed by reviewing the research background, similar models and results of previous researches. It is displayed in Figure 3.

Figure 3. Theoretical framework of the study

Considering the conceptual model, the hypotheses are:

1. There is a significant relationship between centralization and supply chain performance.
2. There is a significant relationship between formalization and supply chain performance.
3. There is a significant relationship between inter-sectoral coordination and supply chain performance.
4. There is a significant relationship between senior managers' support and supply chain performance.
5. There is a significant relationship between reward system and supply chain performance.
6. There is a significant relationship between control system and supply chain performance.
7. Mediating factors of market orientation effective on supply chain performance can be prioritized.

3. Statistical Population and Sample

The statistical population included all experts of Reef Iran Chemical and Industrial Group (N=120) that were selected using purposeful sampling. To determine the ratio of members of statistical populations with a special characteristic, the following relation is used to determine the sample size (n):

$$n = \frac{Z^2 s^2}{d^2}$$

In the above relation, the normal variable (S) corresponding to confidence level 0.95% is considered equal to 1.96, variance of the primary sample (Z) in the statistical sample is equal to 0.3763 and permissible error is equal to 8%. Thus, using the formula (1) at confidence level 0.95% and permissible error 8%, the sample size will be equal to:

$$85 = \frac{(1/96)^2 \ (0/1416)^2}{(0/08)^2}$$

According to Morgan Table and the formula to determine the statistical sample and examining standard deviation of the primary sample, the statistical size was equal to 85 persons.

4. Methodology

This study was conducted using descriptive-developmental method. In order to test the hypotheses and explore mediating components of market orientation and their effect on supply chain performance, a questionnaire was devised in two sections. Validity was confirmed by means of content validity (the experts) and reliability was calculated equal to 0.8834 via Cronbach's alpha coefficient and SPSS software. Given that Cronbach's alpha coefficient greater than 0.70 is acceptable in social sciences studies, reliability of the above questionnaire is good. The questionnaires were distributed among 30 managers and experts who were selected as the primary sample to determine the sample size. Also, validity and reliability of the questionnaire was confirmed using this primary sample.

5. Data analysis methods and testing of hypotheses

In order to offer an appropriate analysis of data, the statistical population was investigated using descriptive statistics. The purpose was to evaluate the samples under study in terms of gender, education level, and demographic characteristics to achieve a general view about the subjects.

Table 1. Descriptive indexes

Gender	Male	Female	
	64%	21%	
Education level	Associates	B.A	M.A and higher
	8.5%	41%	50.5%
Work experience	1-10 years	10-20 years	20-30 years
	32.5%	34%	33.5%

In this section, inferential statistics were used to test the hypotheses at error level 5%. Correlation and regression tests were utilized to explore market orientation mediators in supply chain performance and TOPSIS technique was used to explore the importance and prioritize the effective mediators in supply chain performance.

5.1. Testing of Research Questions (hypotheses) Based on the Results of Correlation Test

The statistical hypothesis is stated as follows:

Hypothesis 1: There is a significant relationship between centralization and supply chain performance.

H0: There is not a significant relationship between centralization and supply chain performance.

H1: There is a significant relationship between centralization and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between centralization and supply chain performance. Given that r= 0.521, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between centralization and supply chain performance (Table 2).

Hypothesis 2: There is a significant relationship between formalization and supply chain performance.

H0: There is not a significant relationship between formalization and supply chain performance.

H1: There is a significant relationship between formalization and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between formalization and supply chain performance. Given that r= 0.557, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between formalization and supply chain performance (Table 2).

Hypothesis 3: There is a significant relationship between inter-sectoral coordination and supply chain performance.

H0: There is not a significant relationship between inter-sectoral coordination and supply chain performance.

H1: There is a significant relationship between inter-sectoral coordination and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between inter-sectoral coordination and supply chain performance. Given that r= 0.431, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between inter-sectoral coordination and supply chain performance (Table 2).

Hypothesis 4: There is a significant relationship between senior managers' support and supply chain performance.

H0: There is not a significant relationship between senior managers' support and supply chain performance.

H1: There is a significant relationship between senior managers' support and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between senior managers' support and supply chain performance. Given that r= 0.447, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between senior managers' support and supply chain performance (Table 2).

Hypothesis 5: There is a significant relationship between reward system and supply chain performance.

H0: There is not a significant relationship between reward system and supply chain performance.

H1: There is a significant relationship between reward system and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between reward system and supply chain performance. Given that r= 0.534, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between reward system and supply chain performance (Table 2).

Hypothesis 6: There is a significant relationship between control system and supply chain performance.

H0: There is not a significant relationship between control system and supply chain performance.

H1: There is a significant relationship between control system and supply chain performance.

As $p<\alpha=0.05$, there is a significant relationship between control system and supply chain performance. Given that r= 0.573, there is moderate to high correlation. Thus, H0 is rejected and there is a significant and reverse relationship between control system and supply chain performance (Table 2).

Table 2. Correlation among components of hypotheses

Hypothesis	Independent variable	Dependent variable	Correlation coefficient	Degree of freedom	p
1	Centralization	Supply chain performance	0.521	84	0.000
2	Formalization	Supply chain performance	0.557	84	0.000
3	Inter-sectoral coordination	Supply chain performance	0.431	84	0.000
4	Senior managers' support	Supply chain performance	0.447	84	0.000
5	Reward system	Supply chain performance	0.534	84	0.000
6	Control system	Supply chain performance	0.573	84	0.000

5.2. Testing of hypotheses based on regression analysis

In regression analysis, the equation is as follows:

DF = f (X1, X2, X3, X4, X5, X6)

X1= centralization

X2= formalization

X3= inter-sectoral coordination

X4= senior managers' support

X5= reward system

X6= control system

Results of regression test are shown in the below table that according to the model, $p\text{-}r<\alpha=0.05$. Therefore, the model is generally significant. Given to results of t-statistic, centralization and formalization among the components under study were inserted the model (Table 3).

Table 3. Regression test

Variables	Parameters	t	p-value
Constant	0.691	2.25	0.027
Control system	0.436	7.45	0.000
Centralization	0.351	4.675	0.001

In the model for regression test, R2 is equal to 0.45 and adjusted R2 is equal to 0.44 that can be acceptable.

$\hat{y}$ = 0.691 + 0.436 control systems + 0.351 centralization

Hence, control system (0.436) and centralization (0.351) are effective in the model and are related to other mediators but they do not show themselves when centralization and control system are present. In other words, effects of market orientation mediators that include formalization, inter-sectoral coordination, senior managers' support and reward system are lower when control system and centralization exist.

Hypothesis 7: Mediating factors of market orientation effective on supply chain performance can be prioritized.

In this hypothesis, the questions supporting the hypotheses were ranked based on their importance in supply chain using TOPSIS technique. Results of this test are presented separately in Table 4 and their prioritization is shown in Table 5.

Table 4. Ranks of mediating factors of market orientation in supply chain performance based on TOPSIS technique

Row	Name of component	Rank
1	Centralization	0.674
2	Formalization	0.531
3	Inter-sectoral coordination	0.634
4	Senior managers' support	0.652
5	Reward system	0.574
6	Control system	0.683

TOPSIS model is one of the multiple attribute decision making (MADM) methods in which the components are prioritized. The steps include formation of decision table, data normalization, formation of weighted average matrix, determining the positive and negative ideals and applicable ranking index (Azar & Rajabzadeh, 2013). Full prioritization of mediating components of market orientation is shown in Table 5 in terms of importance using TOPSIS technique.

6. Discussion and Conclusion

Market orientation can be defined as a strategy to achieve competitive advantage based on access to the information in the organization and a satisfactory performance in the market. Competitiveness of organizations in the domestic and global markets is regarded as an important and strategic factor in market orientation. To put it differently, business firms have to identify the characteristics of domestic and global markets, characteristics and needs of customers and performance of competitors accurately and provide the required necessities for competition in such markets in their organizational system to improve their competitiveness. The present study was aimed to explore the role of mediating factors of market orientation in supply chain performance. Research hypotheses were proposed by studying the research background and theoretical principles and then they were tested by means of correlation and regression tests. Also, the factors were prioritized using TOPSIS technique in terms of importance of the mediating factors of market orientation.

Analysis of results of hypothesis one illustrates that given to the correlation coefficient, it can be concluded that this mediating factor has a significant relation with supply chain performance and there is moderate to high correlation. Thus, it can be argued that this factor is effective on supply chain performance. In order to enhance this index, it is suggested to identify the capabilities in a special situational context and managers' responsibilities before developing the capabilities of employees. Managers can create and develop some distinguished capabilities in the organizational context by utilization of knowledge and experience in a special organization and industry. It is suggested to managers to empower their employees and increase their capabilities by convincing them to participate in all aspects of product management, providing an opportunity for experimentation, testing new ideas and learning from experiences. As a result, they can decentralize the organization.

Analysis of results of hypothesis two illustrates that given to the correlation coefficient, it can be concluded that this mediating factor (formalization) has a significant relation with supply chain performance and there is moderate to high correlation. The emphasis on rules, procedures and work methods to direct employees' behavior to improve performance of the organization can be referred to as formalization which has a direct effect on supply chain performance. Organizations should determine job description, degree of supervision, degree of freedom of action granted to subordinates and managers, standardization level of tasks and degree of rules' execution in order to be more successful in their growing supply chain performance. Also, formalization is a kind of standardization measure. Freedom of action has a reverse relationship with planned behavior by the organization. Considering the importance of formalization in market orientation and performance of the organization, it enhances customer satisfaction positively.

Analysis of results of hypothesis three illustrates that given to the correlation coefficient, it can be concluded that this mediating factor (inter-sectoral coordination) has a significant relation with supply chain performance and there is moderate to high correlation. Inter-sectoral coordination is effective in the relation with supply chain performance of organizations and generally inter-sectoral coordination or degree of formal and informal relations among employees in different sectors enhances market orientation and effectiveness of organizational performance. This facilitates coordination of information and the ability to respond market information and thus is led to a dynamic performance in the market. Hence, it can be acknowledged that this coordination is in customers' centrality and is resulted in customer orientation. But conflict and tension in inter-sectoral coordination is due to dissimilar behaviors of cumulative and common reactions towards market needs and demands and is led to destruction of market orientation and finally decline of organizational performance. Special attention should be paid to dimensions of inter-sectoral coordination, i.e. the horizontal dimension that connects different sectors to each other at a certain level and the vertical dimension that connects different levels inside a sector for more desirable inter-sectoral coordination. Also, inter-sectoral values and interests, transparency of responsiveness, responsibility, ethical issues and commitment should be considered at the highest level of professional standard and practical measures. Common values and practical plans and responsibilities, determining key responsibilities, constitution of inter-sectoral teams, recognition of key employees and managers in each sector and identification of mission of each section should be considered specifically.

Analysis of results of hypothesis four illustrates that given to the correlation coefficient, it can be concluded that this mediating factor (senior managers' support) has a significant relation with supply chain performance and there is moderate to high correlation. Senior managers' support forms values, interests and orientations of an organization and has a positive effect on organizational performance. It is an important and basic factor in effectiveness of performance inside the organization. Activities of senior managers should be devoted to strategic actions, foresight, idea generation and the like, so organizations will always take step towards enhancement of productivity dynamically. Supportive role of senior managers provides a secure environment for organizations and decreases many job and organizational tensions and pressures. Role of senior management is emphasized as a pre-condition to foster customer orientation. Creating a favorable atmosphere and encouraging and admiring market-oriented behaviors among employees are tasks of senior management. Efficient relations and support of managers in an organization are vital to develop domestic customer orientation. Emphasis of the senior management on market orientation has a positive effect on market orientation level of the organization.

Analysis of results of hypothesis five illustrates that given to the correlation coefficient, it can be concluded that this mediating factor (reward system) has a significant relation with supply chain performance and there is moderate to high correlation. The reward system is very important in effective performance of employees. If the reward system is inefficient and an appropriate management system is not used, how it is executed is no longer important, because the reward loses its effect. A reward that its major function is to motivate and provide the needs of employees will be converted into a powerful resource to discourage the employees if it is not considered properly. Inaccurate implementation of reward strategy damages other sectors and often threatens employees' organizational health, although it provides some of their needs. Reward system is the powerful strategy of the organization that should be used to achieve superior individual and organizational performance. If organizational architecture and designing the reward system are in a way in which interests of employees are toward that of the organization, employees will not observe any conflict between personal and organizational interests at the time of decision making and thus, they will make the best possible decision for the benefit of the organization. Reward system directs the organization and employees toward the best performance. Hence, reward strategy not only helps employees provide their cost of living but enriches their job experience and provides their motivational satisfaction at all levels. Reward systems are indexes for rewarding the employees that motivate their actions and consequently enhance organizational performance. They can create the motivation to adopt new behaviors and attitudes compatible with the growing performance in employees. If senior managers' support, inter-sectoral coordination and reward systems are guaranteed and emphasized, performance of the organization can be implemented effectively even in organizations with centralized decision making structure. Reward systems should create an incentive for adopting market-oriented behaviors instead of rewarding the profits or short-term sales. Any attempt with the purpose of providing the best possible quality for customers must be rewarded towards a dynamic performance.

Analysis of results of hypothesis six illustrates that given to the correlation coefficient, it can be concluded that this mediating factor (control system) has a significant relation with supply chain performance and there is moderate to high correlation. Also, based on the results of regression test, it can be suggested that it has more effectiveness on supply chain performance. Control systems have a positive effect on market orientation and supply chain performance and reinforce market-oriented behaviors. When senior management guarantees less control on employees, an organization can become more market-oriented and have a dynamic performance in the market. Given that organizations need continuous improvement of their performance for their survival and progress in the current competitive world, using control systems is essential. With regard to an efficient and effective control system on performance, the expected results and do's should be considered. If they are not determined properly, the control system will be failed, since two elements are required for control that one of them is do's. Similarly, indexes should have a direct relationship with the issue under control and they must have relative comprehensiveness and include different aspects as far as possible. Determining the standard in control system is one of the most important factors. In order to make the control system efficient, key points should be specified that are one part of the operation of plan and play an important and determining role in the outcome and performance of the whole plan. Key points are selected because controlling all operational flows is not possible or cost efficient. Therefore, one or more points should be selected and controlled. Any program has its special strategic points of control system and the manager and planner can recognize these points properly by knowing the elements of the plan.

Analysis of results of hypothesis seven illustrates that mediating factors of market orientation that are effective on supply chain performance can be ranked and prioritized using TOPSIS technique (Table 5).

Table 5 Prioritization of mediating factors of market orientation in supply chain performance based on TOPSIS technique

Row	Name of component	Rank
1	Control system	0.683
2	Centralization	0.674
3	Senior managers' support	0.652
4	Inter-sectoral coordination	0.634
5	Reward system	0.574
6	Formalization	0.531

According to the results of TOPSIS technique, indexes of control system, centralization and senior managers' support are more important that shows importance of these factors in supply chain performance. They will have a considerable effect on its success. The most effective mediating indexes of market orientation that can be effective in supply chain performance were represented via the regression test. Mediating indexes of control system and centralization are highly effective on supply chain performance. This reveals that control system that is a continuous process to assure adaptation of real results with the predicted plans is very effective on supply chain performance and that control systems are tools to evaluate effectiveness and efficiency of other activities of management, i.e. planning, arrangement, manpower supply and leadership. Control systems have a wide scope and various forms that include supervision and guidance, measurement of activities, processes and results, monitoring, all kinds of audit, assessment, revisions and so on. There is a close relation between fulfillment of purposes and plans and implementing the required modifications with dynamitic and growing performance of supply chain for success and obtaining a high market share. Reviewing market orientation literature, the concepts, theories and conducted studies in this regard reveals that market orientation improves supply chain performance both in terms of financial and non-financial indexes. Therefore, it is essential that all organizations pay attention to different dimensions of market orientation. Market orientation helps organizations find out the needs and demands of their customers and try to satisfy them. Competitor orientation enables organizations to create more value for customers than other competitors and achieve stable competitive advantage in this way. Inter-sectoral coordination helps organizations exchange the information obtained from customers and competitors freely and effectively among operational units and respond to changing needs of market rapidly and coordinately. In sum, it can be stated that market orientation improves supply chain performance in organizations.

This study has limitations and it can be stated that fuzzy techniques can also be used for more accurate and better evaluation of the relationship between market-orientation stimulants and supply chain performance of the organization.Following, you will find some suggestions for future researches:

It is suggested to explore the proposed model in this study in other organizations and compare the results with each other.Researchers can use fuzzy logic in their researches and decrease the errors related to the obtained data from the questionnaire.It is suggested to explore organizational complexity as one of the structural factors and its relation with market-orientation. One of the effective factors in the relation between market-orientation and performance that affects strength of the relation is competition in the industry. It is suggested to explore the role of this variable as a moderating variable in this relation.

7. References

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