

## The Impact of Supply Chain Management Strategy on Organizational Performance Through Total Just in Time (T-JIT) by Using Approach of Structural Equation Model

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**Abstract:** The aim of this study is to investigate the impact of supply chain management strategy on firm's performance considering total just in time. This research is descriptive kind and is practical from objective point of view. It is considered field study from the aspect of data collection. The instrument used in the study is questionnaire involved 14 questions to measure the whole of variables of the study. Likert scale of 5-point is also used to measure the variables. The validity of the questionnaire was verified by professors and experts and its reliability through Cronbach's alpha. The sample of the current study is the managers of Rasht's food industry. The final sample of the study including 130 individuals investigated using Cochran's C-test. Structural equation of modeling method was used to test the hypotheses. The result showed that management strategy of supply chain has had positive and significant effect on total just in time production and organizational performance. Likewise total just in time production has positive and significant effect on organizational performance. In other words total just in time production has had the role of mediating variable in the relationship between supply chain management and organizational performance.

**Key words:** Supply chain management strategy, total just in time organizational performance, positive, professor, expert

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### INTRODUCTION

In a now a days complex, dynamic and fluctuated milieu, firms require designation and implementation of strategies to be able to assist them in improving the rate of their performance because in such a competitive milieu, firms which are able to survive that not to be thrown away from competition and synchronize themselves with dynamic and fluctuated condition of competitive market. In other words, the firm managers will observe the sum of their decision-making in the form of strategies selection in the eyes of performance criteria. Data analysis and performance comparison was observed with the former process, rivals and or the average of industry provide an appropriate feedback to decide and choose future activities because of this, one of the important goals of the whole of the firm overtime, has been the perpetual improvement of performance.

The presentation of the best organizational performance has been the most fundamental disturbance of industrial firm's managers and they try to attain the superior performance by utilizing different techniques (Chen and Lai, 2010). Kooper states that the superior performance depends on the ability of an industrial institute to integrate with its associates along with supply

chain (Kim, 2009). During the last decade several firms facing the necessity of prompt decreasing of expenses, accompanied by improving the quality and keep flexibility in meeting the markets needs and shortening the cycle of products distribution, necessity of fundamental change in its mental pattern has felt to attain to a major change in results. This new mental pattern called supply chain that is based on this belief that synchronization with the characteristics of the current era requires optimized activities and process management is not only in the realm of an organization but also in the whole chain of supply (Li *et al.*, 2006). Accordingly, this common belief has been running rife in all the industrial firms such as car-makers that how the management of supply chain will be the most crucial factor to obtain the competitive advantage in the future and from now on there are not car-makers that compete with each other but it is the supply chain that determine their success or failure (Shahroodi and Sanei, 2011).

So, in the current study the strategies of supply chain and its effect on institutional performance will be investigated and the importance of variables role such as total just in time will be deal and it has been tried to investigate more meticulous causal relationship between variables.

**Literature review:** Green *et al.* (2014) in their study explored of the effect of supply chain strategies and total just in time on the ability of supply chain and institutional performance among operational managers and the managers of productive-industrial of the USA firms. The results of the study showed that the strategies of supply chain management have significant effect on total just in time. The results also showed that total in time production has significant effect on the quality of the supply chain. The quality of the supply chain also has a significant effect on organizational performance. The results of the fitting indexes showed the coordination of collected data with the conceptual model of the study.

Fajriah *et al.* (2014) in their study investigated the effects of the supply chain of management activities and total just in time on organizational performance through the mediating role of the competitive advantage between Indian firms. The results of the study showed that the steps of supply chain management have a significant effect on total just production, competitive advantage and organizational performance. In addition, their investigation showed that total just in time production has a significant effect on competitive advantage and organizational performance and the competitive advantage can have a mediating role.

Inman *et al.* (2011) in their study explored the relationship between brisk production and total just in time operational performance and organizational performance. The results show that total just in time has a direct positive relationship with operational performance of the firm that the operational performance of the firm has also a positive relationship with marketing performance of the firm. In addition there is a positive relationship between the operational performance of the firm through marketing performance and financial performance of the firm.

Green and Inman (2005) in the other study also explored the effect of total just in time on organizational performance. They also investigated the market-oriented mediating role. The sample includes 166 mega productive firms of the USA that the managers of these firms were investigated as the sample of the study. The results of the study showed that total just in time production has significant effect on organizational performance. Likewise, market-orientation plays complete mediating role in this relationship.

Koh *et al.* (2007) to investigate the effect of management operations of supply chain on organizational performance related to supply chain management and organizational performance of mediocre firms in industries of metal products and machines by public usage in Turkey enjoyed of different indexes in comparison with

past studies to measure management operation of supply chain. They analyzed the management operation of supply chain according to close partnership with suppliers, close partnership with customers, total just in time system, strategic programming, supply chain pattern-making, using few providers, keeping security saving, doing sub-contracts, electronic supplies, extraneous use, using those firms that present logistic services and using lots of providers. They relate this case to lack of balance and chaos in economic growth in Turkey (during the time of implementation of the study) and risk escaping of small and average firms in comparison with big firms. In addition, the results of the study show that the management operation of supply chain has a direct positive and significant effect on operational performance but it has not a direct effect on organizational performance related to supply chain management. Since, there has been a direct significant relationship between 2 operational concepts, it can be declared that the factors of supply chain management operation have a positive and indirect effect on organizational performance related to supply chain management through operational performance.

Li *et al.* (2006) in their study investigated the effects of supply chain management methods in competitive advantage and organizational performance. The researchers in this study, through omitting the index of interior operation (noble production) of supply chain management operation index considered the effect of this variable on organizational performance in different industries of the USA. The results show that the implementation of supply chain management can improve the performance of the market and the firm financial performance in long run directly.

Kim (2009) explored the effect of convergence of operational ability of supply chain and competitive ability on firm performance considering the effect of moderator of developmental integration stages of supply chain. He concentrated on different industries in Japan and Korea. In this study, operational ability of supply chain analyzed based on structural ability dimensions, technical ability and logistical ability. The results of this study showed that in parallel with the development of supply chain integration stages through creation of interaction among operational ability of supply chain and firm competitive ability, the firm's performance from the perspective of customers satisfaction will be improved and then the performance level based on the market will be increased and finally the financial performance will be boosted. Convergence among distinctive abilities or customers services by logistical ability lead to customer satisfaction, convergence among innovative marketing ability with

technical ability lead to the performance based on market and accordance among leadership of expenses ability with structural ability also result in improving the financial performance. When crucial criteria of customer satisfaction performance will be changed to the performance based on the market and finally to the financial performance, the concentration on abilities can move from distinction/customer services abilities-logistical abilities to innovative marketing ability technical ability and finally to leadership of expense ability-structural ability but the effect of interaction between two abilities investigated in the study that is firm competitive ability and operational ability of supply chain on firm performance by developing the integration stages of supply chain have decreased and finally the integration supply chain substitutes the effect of the interaction of these two abilities on performance.

### **Theoretical principles of research**

**Organizational performance:** Performance is a word that has the concept of activity to do a work and the result of that activity simultaneously. In fact, performance is the result of the action. Thus, the performance is a total construction that points to how to implement the operation. It can be said that performance is conversion of learning to evident behavior. Namely, it is the result of the learning not the learning itself. So, the actual observable and measurable behavior are called performance. Performance literally means the state or quality of output. Thus organizational performance is a total construction that points to how to do an operation. The most famous definition of performance is presented by Nilly the process of presentation of the quality of efficacy and former affairs efficiency. According to this definition the performance divides into 2 elements, efficacy that describes how an organization uses resources to produce services or products. Namely, the relationship between real and propitious combination of inputs to produce determined output, efficiency that describes the degree of attaining to organizational aims.

Organizational performance is called how to do the missions, the responsibilities and organizational activities and subsequent results. The performance is known as acceptance of the results for interior and exterior of organization customers that receive the products, services, information and the decisions or functional events like presentations or competitions (Rezaian, 2011). Organizational performance or success is defined and determined by competence of the firm to compete and measure as capital withdrawal, selling withdrawal, profitability in comparison with associates (Green *et al.*, 2014).

**Supply chain management:** Now a days by considering the industrial development of the world the diversity of the product has increased and the products have special complexities. By considering the existence of several segments in some of these products the need to organize the production and structure of the segments are felt but the arrangement of supply the raw material, machinery and human resources have lots of problems. Preparing and producing the whole segments in the firm bring about lots of problems that the most important of them is the way of organizing the human resources and also creating extra resources in the time market and demand changes (Inman *et al.*, 2011). During the time the organizations realize that to organize properly provision of segments, it has been better to use the exterior of organization resources. So, the mentality of supply chain formed because productive organizations realized that they cannot emphasize just on their interior efficacy and short run benefits independently and without considering their surrounding conditions. The current organizations need accurate coordination to prepare raw materials and to deliver on time to customers to be able to decrease the expenses to receive and deliver on time and finally have the customer satisfaction considering the mentioned points, management of supply chain can be come up as a useful and effective strategy in this field. The study on the evolution of management shows that the firms primarily have considered the management of supply chain to stay against severe environmental changes and to improve the organizational performance and then to obtain more market stock and to obtain competitive advantage. These studies show that the effective management of supply chain by having a positive effect on its components and elements such as human resources cause the increase of performance, customer satisfaction and decrease of pessimism and to obtain competitive advantage (Badar *et al.*, 2013). Supply chains involved value chains that include an umbrella term from salesperson to the target customer. The management of supply chain requires integration-making and coordinating the business process that is all through the supply chain aiming to meet and to answer the final customer demands changes.

The aim of supply chain management is to coordinate production, stock, the place, transportation between elements of a chain to obtain the best combination of replying and efficiency for market. Management of supply chain, like any system of management, needs measurement system of performance. The management of supply chain is a combination of art and science to improve the access to raw materials, making the products or services and its transfer to the customer. The

management of supply chain involves the integration of supply chain activities as well as informational flows related to them through improvement in chain relationship as well as achieving reliable and permanent competitive advantage, therefore, the management of supply chain is defined as integration-making process of supply chain activities and also relevant informational flows through improvement and integration of activities in the chain of supply and demand.

Elinger found out that high-ranking or high-quality SCM firms show higher levels of customer satisfaction and the value of shareholders rather than the average of relevant industries in the management of supply chain. Thus, competence of supply chain as an echo of the performance of supply chain stands against the performance of individual partnership firms. The competence of supply chain is defined as the power of supply chains to response to customer's needs with low cost and high quality in product and services (Green *et al.*, 2014).

**Total Just in Time (T-JIT):** The logic behind total just in time production is to reduce and to omit the wastes (Jinhui *et al.*, 2012). However, the total concentration is on production process. The activities of total just in time production has been widespread through supply chain and include adherence of purchasing and selling. Synergy, in Greek is defined as working with each other and as Aristotle stated “the whole is larger than the sum of each its parts”. Recent studies such as Frolich and Vestebrook have used the term synergy to refer to the result of integration of the components of supply chain. Other study in the realm of supply chain make use of the terms “complementary” and also “combinational” to refer to the effects of integration-making. Specially, Kliakomb have used the term “just in time production of comprehensive system”. Chen and Tan (2011) have used the term “condensed set” as the elements of comprehensive total just in time production and white and associates have used the term “the whole perspective” just in time production (Green *et al.*, 2014). Chen and Tan (2011) realized in their study that although the unique elements of the whole just in time production will have different effects on a business, they also have co-adding effect and it is the improved performance of an organization's productive operations and it is caused by using a condensed set of all the elements of the whole just in time production and it is not related to the kind of the industry or the size of the firm (Chen and Tan, 2011).

Therefore, the total just in time production can be considered as an integral strategy that not only facilitates

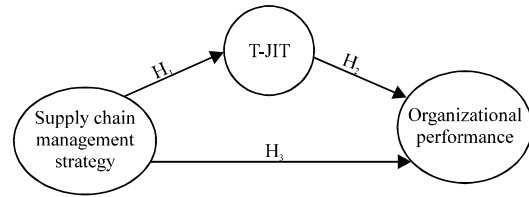


Fig. 1: Conceptual model (Green *et al.*, 2014)

the proportion and quality in production but also in supply and distribution. Kliakomb and associates used the term “the whole total just in time production” to explain about production strategies combination in total just in time production, purchase in total just in time production and selling in total just in time production. However the term the whole system use needs to be developed. In response to this need and in this study, the fourth component is added. Information in total just in time production lead to the acceptance of another term that is Total Just in Time (T-JIT) to involve the conceptual nature of the structure and explain its effect on supply chain competence and organizational performance (Green *et al.*, 2014).

Regarding the discussed contents, aim of the study is to investigate the impact of supply chain management strategies and total just in time production on organizational performance. Perceptual model of the study has been described in Fig. 1. Considering the conceptual model the hypothesis of the study are as follow:

- H<sub>1</sub>: Supply chain management strategy has a significant impact on total just in time production
- H<sub>2</sub>: Total just in time production has a significant impact on organizational performance
- H<sub>3</sub>: Strategy of supply chain management has a significant effect on organizational performance
- H<sub>4</sub>: Total just in time has a mediating role in strategy impact of supply chain management on organizational performance

## MATERIALS AND METHODS

The current study is descriptive-quantitative and its entity and method is based on correlation. The current study sample is the managers of Rasht food industry firms including 195 individuals. The volume of the final sample of 130 individuals determined through sampling formula of Cochran's C-test and the considered sample in the current study have been chosen by simple random sampling. The questionnaire of the study has been modified in 2 parts that the 1st part involves general

**Table 1: Description of main variables of the study**

Variables	N	Mean	SD	$\alpha$	AVE	K-S
Supply Chain Management (SCM)	130	2.9887	0.66355	0.783	0.595	0.316
Total Just in Time (T-JIT)	130	2.7699	0.69882	0.844	0.608	0.365
Organizational performance	130	3.3312	0.57440	0.790	0.599	0.318

information related to respondents and the second part test the hypothesis including 14 questions and it is divided to four parts and each part measures a variable of the study. To measure the variable of management strategy of supply chain from 6 items of Wisner in the form Likert scale of 5-point, 4 items Klikamp *et al* in the form Likert scale of 5-point to measure total just in time production and 4 items Green and associates used to measure organizational performance in the form Likert scale of 5-point. Validity of the current questionnaire has been investigated utilizing factorial analysis of validity and reliability using Cronbach's Alpha that the results have been indicated in Table 1.

**RESULTS AND DISCUSSION**

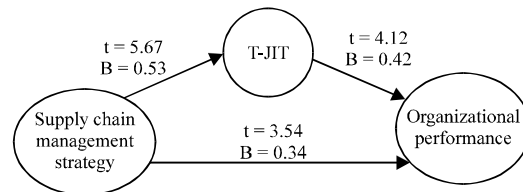
**Description of demographic variables:** Considering the data analysis 6.9% (9 individuals) of the current study sample were females and 93.1% (121 individuals) were males. Furthermore, the most distribution of bachelor degree was 54.6 (71 individuals) and the least distribution was related to diploma with 13.8% (18 individuals). The most distribution of age was between 40 and 50 with 56.9% (74 individuals) and the least distribution of age was under 40 with 26.9% (35 individuals). Descriptive results of the main variables of the study are depicted in Table 1.

**Confirmatory factorial analysis:** The results of the investigation of the questionnaires parts using factorial analysis have been illustrated in this part. The appropriate amount is over 0.5 for factorial bars that indicates the propitious relationship of the given index with the latent variable. The results of the factorial bars have been described in Table 2 considering separate variables.

**Exploring research hypotheses:** This part represents the results of the investigation of the current study's conceptual modeling and hypothesis based on model-finding techniques of structural equations. Judgment criteria is t data about hypothesis and the evaluation criteria of the model of the study is fitting

**Table 2: The results of factorial analysis of the questionnaire**

Variables	OP	JIT	SCM
SCM1	-	-	0.69
SCM2	-	-	0.80
SCM3	-	-	0.73
SCM4	-	-	0.77
SCM5	-	-	0.90
SCM6	-	-	0.72
JIT1	-	0.88	-
JIT2	-	0.70	-
JIT3	-	0.73	-
JIT4	-	0.84	-
OP1	0.71	-	-
OP2	0.66	-	-
OP3	0.84	-	-
OP4	0.89	-	-



**Fig. 2: Research model on the standardized coefficients**

indexes. If the amount of t data is placed out of -1/96 and +1/96, the hypothesis will be confirmed. The structural coefficient also represents the amount of the relationship or the effect of the independent variable on the dependent variable. The result of the investigations is depicted in Table 2 and 3, Fig. 2. Fitting indexes represented in Table 3, illustrates that the model is in convenient harmony with the collected data from the sample of the study. On the other hand the model shows the relationship properly. Table 4 show all of direct paths that are based on the hypothesis of the research as well as significant numbers and significant coefficients T and it can be approved or rejected the hypothesis of the research based on these outcomes.

The indirect path has been presented in Table 5 to investigate the mediating role of total just in time production. As it is determined the amount of t-statistic has been for indirect relationship over 1.96 and therefore, the mediating role of total just in time production's variable has been approved in relationship between management of supply chain and organizational performance.

Table 3: Indices of model fit

Indexes	RMSEA	$\chi^2/df$	NFI	NNFI	CFI	GFI	AGFI
Achieved amount	0.056	2.54	0.93	0.93	0.94	0.92	0.9
Allowable amount	>0.080	>3.00	<0.90	<0.90	<0.90	<0.90	<0.8

Table 4: Direct path analysis of hypothesis

Hypothesis	Path	Beta coefficient	t-statistic	Results
1	Supply chain management strategy to T-JIT	0.53	5.67	Accept
2	T-JIT to organizational performance	0.42	4.12	Accept
3	Supply chain management strategy to organizational performance	0.34	3.54	Accept

Table 5: The exploration of mediating role of total just in time production

Hypothesis	Path	The amount of the impact	t-statistic
H <sub>4</sub>	Supply chain management to total just in time production to organizational performance	(0.53) (0.43)-0.223	(5.67) (4.12)

### CONCLUSION

Regarding the attained results and confirmation of the hypothesis and observation of the positive effect of independent and mediating variables on the performance of food industries firms it has been suggested that the managers of producing integrate different activities including supply of raw material produce and distribute products in an efficient way through providing mechanisms such as holding meetings with partnership of agents from supplier and distributor firms and they are expected to reduce the replying time to customers and by this way achieve superior competitive advantage in their own industries. It has been suggested that partnership decision-making and enjoyment of consultative opinions of members insert in emphasized supply chain of managers and through this trust forms in different parts of the chain, it has been proposed to enjoy the strategies of the teams of supply chain. These teams can permanently cause coordination and integration of productive activities along with attendance in different parts of the chain; according to data analysis, total just in time production has taken the lowest mean. Thus, it is suggested that the managers of in time strategies emphasize some points including in time production, in time purchasing, in time selling and in time information to enjoy the advantages of total just in time along with realization of firm aims.

### SUGGESTIONS

The followed suggestions also can be effective: Partnership of all suppliers in designing process and products development and the services of supply chain, considering the influential role of the cooperation of the set of supply chain in competitive advantage and its organizational performance. It is proposed to create a friendly atmosphere of cooperation among the components of supply chain set; using the comments of

the management components of supply chain in order to improve programs and activities and contact with users and target customers to get the feedback through the common ways; keep trying to preserve and satisfy key customers of the firm; on time and direct delivery to the used points of the customers and firm; compilation of long run plans to create communication with supply chain components set against having casual and short run communication with them.

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