

Evaluation and Prioritization of Effective Factors on Supply Chain Performance (Case Study: Food Industries of Guilan province)

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ABSTRACT

The purpose of this study is evaluation of effective factors on supply chain performance in food industry. In terms of technique and implementation, present study is descriptive -analytical research with emphasis on correlation branch. In terms of monitoring the type and degree of control is among the field research. Food industry executives and experts in Guilan province is considered as the statistical community that number of Food industry companies in the Guilan province was 634 units. The sample size was obtained 248 that 250 questionnaires were distributed and 236 questionnaires were collected and the relationship between variables was evaluated through regression testing. Research findings show that type of supplier relationships, cost, and flexibility in relationships, customer satisfaction, process and time has impact on supply chain performance.

KEYWORDS: Suppliers, Supply Chain Performance, Food Industry, Effective Factors on the Supply Chain

1. INTRODUCTION

In environment of complex, dynamic and highly changing today, companies need to adopt strategies and design that can assist them in improving their performance increasing. In fact, corporate managers, the result of decision itself will be observed in the form of selection strategy in the light of performance criteria. This reason most important objective of all companies through time has been continuous performance improvement. Supply chain management is faced with challenges such as building trust and collaboration among supply chain partners (SC), determine the best actions that can facilitate also order and the integration of supply chain process, latest successful implementation of computer information systems and internet technologies that are drive efficiency, performance and quality in the supply chain (Robinson & Malhotra,200). Supply chain management, is result of logical progression in logistics management (Gilaninia,Tayebi & et al,2011).

Planning, organizing and controlling activities in the supply chain is called supply chain management (Chan,Qi,Chan,Lau& Li,2003;APICS,1998). Performance evaluation as an essential tool of management provides need help to improve performance in order to supply chain. However, although the supply chain management has become common act in industry-wide and published current research related to supply chain management theory and actions but has not been considered evaluation of supply chain performance (Chen et al, 2004). Therefore this study deals with evaluation of effective factors on supply chain performance.

2. Statement of Problem

In today's markets, technological and competitive factors increases such as for companies aren't difficult and economical what producing. Instead, outsourcing has become one of major strategies of companies. Supply chain management is attention field of many researchers in different fields. Supply chain was introduced in the 1990s, when was form issues related to the circulation materials (Zarezadeh et al, 2011). Also a growing trend of globalization and customer orientation has led to the sensitive issue of logistics in organizational planning. Supply chain management (SCM) is an approach that is formed from the center of these issues (Gunasekaran,Patel & Tirtiroglu,2011). From customer perspective dimensions of the supply chain is divided to two groups: market determined factor and market winning factors (Christopher & Towill, 2000; Gilaninia et al, 2011). Compete in the global arena requires planning and implementing competitive strategies (M.Karkagh & et al, 2012). Whatever companies are moving toward supply chain management, performance evaluation of supply chains is more necessary. Traditional methods of assessment, of course, less supply chain management in the past decade witnessed a significant growth in extending theory and practice in this area (Theeranuphattana & Tang, 2008). Field of competition and conflict in today's economy, the performance of individual companies has changed to what we call supply chain performance. Proper functioning of the supply chain has a key role in the success of an organization and sustainable achievement profitability specific goals. To succeed in the business environment supply chain needs to continuous improvement. For this purpose it is necessary that is evaluated

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supply chain performance and can be extracted its performance criteria (Feyzabadi & Jafarnejad, 2005, p94). Performance evaluation as a management tool provides necessary helping to improve performance in order to supply chain excellence. However, although supply chain management has become a common action in the level of industry, but evaluation of supply chain performance has not been much attention. In this regard, in this study is investigated the factors affecting on supply chain performance in food industry in Guilan province.

Manian et al in research with title identify effective factors on supply chain performance (case study: the automotive parts industry) was studied effective factors on supply chain performance in the literature and by using experts opinion was identified 34 indicators to measure supply chain performance. In continue by using exploratory and confirmatory factor analysis (correlation - regression study) of among indicators identified, 21 indicators in six factors obtained to measure supply chain performance in automotive parts manufacturing industry. This model customers factors (0/81), process (0/75), cost (0/54), flexibility (0/30), supplier (0/29) and time (0/21) identified respectively effect in performance of this industry and for each factor indicators for the assessment and evaluation is provided. According to factors affecting supply chain performance in research of Mani and et al conceptual model for this study is presented as follows:

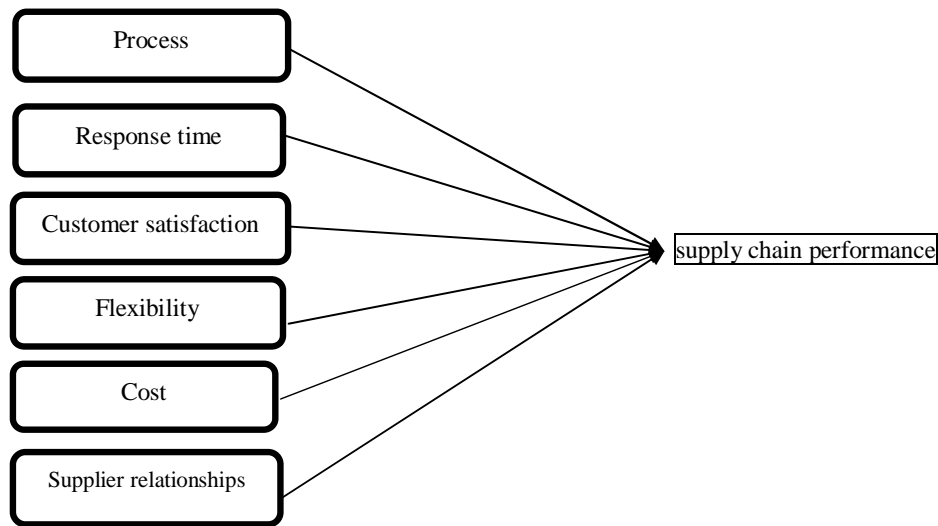


Figure 1: Conceptual model of research (Manian et al, 2010)

Supplier relationships: it is the type of govern relationship in suppliers and level of reliability and accountability suppliers in throughout the chain of suppliers in supply chain (Manian et al, 2010).

Cost: All costs of a supply chain that ultimately is transferred to the final customer of product. (Manian et al, 2010).

Flexibility: the amount of ability supply chain to respond to the changing needs of customers including chain length and final customers.

Customer satisfaction: the ability of attraction of customer satisfaction and loyalty by supply chain.

Process: it is how the performance and activities do during supply chain including the turnover, materials and information.

Time: time required to respond to requests from customers throughout supply chain.

Supply chain performance: it is assessing the performance of a set of metrics (measures) that become quantity the efficiency and effectiveness of actions. Effectiveness is the amount of to meet customer requirements and efficiency is measured the amount of economic use from company resources in the time of creating predetermined level of customer satisfaction (Neely et al, 1995).

Regarding the content expressed and research model, hypotheses are presented as follows:

- 1- Supplier relationships have impact on supply chain performance.
- 2- Cost of supply chain has impact on supply chain performance.
- 3- Flexibility has impact on supply chain performance.
- 4- Customer satisfaction has impact on supply chain performance.
- 5- Process of supply chain has impact on supply chain performance.
- 6- Response time have impact on supply chain performance.

2. RESEARCH METHOD

The objective of this study is applied research. In terms of technique and execution, present study is descriptive -analytical research with emphasis on branch correlation. In terms of monitoring the type and degree of control in this study is among the field research. Food industry executives and experts in this Guilan province is considered as the statistical community that number of food industries companies in the Guilan province was 634 units. The sample size was obtained 248 that 250 questionnaires were distributed and 236 questionnaires were collected and the relationship between variables was evaluated through regression testing. Sampling method in this study is directly and accessible nonprobability. Survey questionnaire is designed based on previous research and also their validity has confirmed by professors of guide and consultant and Cronbach test results show that the questionnaire has been reliable. For data analysis is used regression and Friedman.

3. DATA ANALYSIS

Table 1) result of regression test

Hypotheses	R	B	Sig	Result
First hypothesis	0.301	0.401	0.000	Confirmed
Second hypothesis	0.130	0.099	0.001	Confirmed
Third hypothesis	0.511	0.442	0.000	Confirmed
Fourth hypothesis	0.440	0.457	0.000	Confirmed
Fifth hypothesis	0.285	0.267	0.019	Confirmed
Sixth hypothesis	0.491	0.252	0.007	Confirmed

First hypothesis: According to value R= 0.301 is observed that Supplier relationships have impact on supply chain performance and according to value sig =0.000 is less than 0.05, this effect is significant. Also according to positive coefficient B that its value +0.401 thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.091. Approximately 9 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers supplier relationships (independent variable) as X_1 and performance of supplier chain (the dependent variable) as Y.

$$Y = 2.024 + .401 X_1$$

Second hypothesis: According to value R= 0.103 is observed that cost of supply chain have impact on supply chain performance and according to value sig =0.001 is less than 0.05, this effect is significant. Also according to positive coefficient B that its value +0.099 thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.11. Approximately 11 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers cost of supply chain (independent variable) as X_2 and performance of supplier chain (the dependent variable) as Y.

$$Y = 3.222 + .099 X_2$$

Third hypothesis: According to value R= 0.51 is observed that flexibility have impact on supply chain performance and according to value sig =0.000 is less than 0.05, this effect is significant. Also according to positive coefficient B that its value +0.442 thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.261. Approximately 26 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers flexibility (independent variable) as X_3 and performance of supplier chain (the dependent variable) as Y.

$$Y = 1.991 + .422 X_3$$

Fourth hypothesis: According to value R= 0.440 is observed that customer satisfaction have impact on supply chain performance and according to value sig =0.000 is less than 0.05, this effect is significant. Also according to positive coefficient B that its value +0.457 thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.193. Approximately 20 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers customer satisfaction (independent variable) as X_4 and performance of supplier chain (the dependent variable) as Y.

$$Y = 2.295 + .457 X_4$$

Fifth hypothesis: According to value R= 0.285 is observed that Process of supply chain have impact on supply chain performance and according to value sig =0.019 is less than 0.05, this effect is significant. Also according to positive coefficient B that its value +0.267 thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.057. Approximately 6 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers process of supply chain (independent variable) as X_5 and performance of supplier chain (the dependent variable) as Y .

$$Y = 3.804 + .267 X_5$$

Sixth hypothesis: According to value $R = 0.491$ is observed that response time have impact on supply chain performance and according to value $\text{sig} = 0.007$ is less than 0.05, this effect is significant. Also according to positive coefficient B that its value $+0.252$ thus can be concluded that this effect is direct.

Other hand the coefficient of determination in this hypothesis is 0.042. Approximately 5 percent of the independent variable changes can predict the dependent variable. So regression model can be written in the 95% significance level. In the regression equation considers response time (independent variable) as X_6 and performance of supplier chain (the dependent variable) as Y .

$$Y = 3.427 + .252 X_6$$

Friedmen Test

Table 2) Friedmen Test

N		Mean Rank	Chi-Square	df	Asymp. Sig.
	Supplier relationships	4.37			
236	Cost	3.74	197.854	3	.000
	Flexibility	3.46			
	Satisfaction customer	2.11			
	Process	3.49			
	Response time	3.84			

According to the above table is observed that most important factor affecting on supply chain performance is as follows:

- 1- Supplier relationships
- 2- Response time
- 3- Cost
- 4- Process of supply chain
- 5- Flexibility
- 6- Satisfaction customer

5. Conclusions and Recommendations

Institutional are facing with challenges and competitive market pressures, including globalization, competition and cooperation, diversity of customer needs and shorter product life cycles and supply chain has been considered as a matter of principle (Tung Chen & Fen Huang, 2006, P185). Supply chain management as one of the twenty-first century paradigm of manufacturing AD in improving organizational competitiveness has the importance (Gunasekaran, Patel, Tirtiroglu, 2001). Also, increasing competition in global markets and severe of customer expectations has caused organizations examine supply chain more carefully (Wang & Fen Shu, 2007, p1044). So in order to achieve corporate strategic and macro objectives, it is necessary that correct and complete implementation of supply chain in different areas of performance perspective can be assessed to thereby identify strengths and weaknesses and will act to strengthen and improve or eliminate them (baiat, 2008, p49). According to expressed literature and the results obtained, the following suggestions are offered:

- 1- According to the results of testing the first hypothesis is proposed that companies and suppliers should share information with each other and reviews changes and developments that will effect on the company and suppliers in an informal environment and periodically and working together to solve problems and improve performance.
- 2- According to the results of testing the second hypothesis is proposed that possible costs between companies and suppliers to deliver minimum and rate of return on investment and inventory levels in the circulation between them is appropriate and to minimize storage costs.
- 3- According to the results of testing the third hypothesis that supplier must have sufficient flexibility and in presenting their products and services has been variety and have flexibility and rapid response to meet the needs of company.
- 4- According to the results of testing the fourth hypothesis that suppliers work in accordance with company expectations and in their relationships to fulfill their promise and their relationships to establish trust between themselves and the company.
- 5- According to the results of testing the fifth hypothesis that supplier has been effectiveness in distributing their products and services and share information between themselves and the company do correctly and orders are delivered on time.

6- According to the results of testing the fifth hypothesis that be minimize order time and orders are delivered also according to anticipated time and response time to orders be done quickly.

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