

The effects of logistics applications in Turkish textile– clothing industry on national competitiveness

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Abstract. Nowadays ongoing rapid change and developments in modern management arena closely affects management methods as well. Having parallels with this ongoing change and developments in modern management arena of the understanding of providing the services have started to change as well. After production processes as much as production processes of the products are the important factors in competition.

This research aims to find out the effect of logistics applications of Turkish textile and clothing industry on the competition in national arena. This research was done on the current textile- clothing companies which were registered to TOBB (Union of Chambers and Commodity Exchanges of Turkey) in the last quarter of 2012. In the industry logistics applications were studied and these were evaluated in terms of competitive power. Consequently, some differences were found out in relation to the effect of logistics applications in textile and clothing on competitive advantage.

Keywords: logistics, competitive advantage, textile- clothing industry, logistics performance, national competitiveness, product delivery

1 INTRODUCTION

Not only the developing competitive factors cause the companies to exist in only local market as a strong organization, but cause to develop market share in the international scale as well. Currently this competition guides the companies' interests including SME (Small and Medium Enterprises). Competition is not only among the products which the companies produce in their factories but also in addition to the factory output; are packaging, services, customer feedback, delivery arrangements, stock activities and value added other activities. Therefore product specifications are not enough to sustain the market share. And logistics management which provides competitive edge and is the major process in providing quality and value to customer is applied (Seki, 2008: iv).

Logistics activities encompass management practices like planning organizing, coordination, direction and control. The aim in logistic activities is to behave by taking into account important indicators for the company like quality, cost, time and service to sustain the existence of the company (Çancı ve Erdal, 2009: 37). Donald Bowersox and David Closs who are the world's known logistics authorities describe six operational purpose of logistics system as: promptness, reliability, least amount of stock, consolidation of distribution, quality, support for life cycle (Long, 2012: 7).

Currently for the companies which want to obtain competitive advantage it is necessary to bring logistic applications into its best situation. In competitive arena, as global market places change, new competition types appeared and difficulties in activities occurred. Also in this case, operational logistics became an important topic (Ross, 2000: 63). Intensive global competition caused to lose the importance of simple, ordinary strategies of many companies and within the company, supply and demand and competition strategies became global (Yoshino ve Rangan, 2000: 5).

Globalization of economy and in competition requirements, many logistic services like stocking, distribution, packaging, packing and customization, both it is in cost and requires a different expertise. Likewise it is an industry having the same attributes of production industry and it has its own dynamics. When logistics and production industry were evaluated together, in terms of product differentiation and qualities, logistics has its own applications. Global competition has been taking place not only among producers or sellers but in a wider sphere among their providers, distributors, and providers of logistic service.

In the future when the companies' competition is thought to be taking place among the retailers they use, to understand, it is necessary to perform with the people who provide right service accurately and properly, develop in a short time the use the as a competition weapon. This competition is not in the local arena, it will occur among countries and continents, so it must be thought out globally (Salcan, 2011). At the same time it is clear that an effective logistics management will provide the effect of cost reduction, production increase, quality development, the increase of customer satisfaction, and therefore increasing the market share and competitive power (Babacan, 2003: 10).

In most of clothing industry which especially constitutes from SMEs use outsourcing in logistics services. In addition to this, though not many, there are companies which manage their own logistic process and have their own storehouses. But the general trend is in the direction of receiving logistic service. Clothing industry uses mostly land-sea and air transport for their export transportation. For short term orders air transport, for distant markets sea transport, near and neighboring countries' market land transport is preferred. In clothing industry Turkey exports to nearly all the countries in the world. At the same time textile – clothing industry imports many products and uses these products in clothe and other areas.

Logistics industry plays a very important role for Turkey to sustain and increase its competitive advantage in textile and clothing industry. Apart from this, in entering new target markets, the existence logistic infrastructure is very important in developing market activities (Tanrıverdi, 2012: 2). In all activities of the companies the critical point in sustaining competitive advantage depends on a lot of factors (Gümüş, 2007: 151). In this sense in the areas like production- design- marketing- logistics the increase in the value of the chain increases as we move from left to right. In current competitive arena all the phases from production to distribution increases the competitive advantage of the country and become more advantages than their competitors (Tiryaki, 2007: 165).

At the end of the research some differences which provide the competitiveness of textile – clothing industry in national level in Turkey were reached. Some of these are described as closeness to EU geographically, flexibility of distribution and delivery, prompt service, logistic ability, follow up and monitoring and rapid delivery.

2 METHOD

The aim of this study is to determine the effects of logistic applications of textile – clothing companies in Turkey on competition nationally. That's why combing model was used. This research was done on the current textile- clothing companies which were registered to TOBB (Union of Chambers and Commodity Exchanges of Turkey) in the last quarter of 2012. Production of 13 textile products, production of 14 clothing products, the codes which are used in production areas for the textile the cities of İstanbul, Bursa, Denizli, Tekirdağ, Uşak, Gaziantep, Adana and Kahramanmaraş for the clothing the cities of İstanbul, Bursa, Ankara, Denizli, Konya, Tekirdağ, Kırklareli, İzmir, Gaziantep and Adana are included in this study. The content of this study constitute of the operating companies which were registered with Union of Chambers and Commodity Exchanges of Turkey in 2012. While sample size of the research was being worked out, it was taken into account that unit number of the population was unknown. By taking this into account, at least 384 companies were calculated with

sample size of the 0,05 margin of error and 0,95 confidence level. 497 companies were reached at the end of survey.

The evaluation of companies' logistics performances, transport systems which the companies used for their product distribution, distribution methods of the company products, evaluation of differences related to the logistics in terms of companies' competitiveness in national level, and evaluation of the effect in terms of competitiveness of product distribution method in national level over logistics factors were done with the data which was acquired as a result of (ANOVA) survey. Acquired some results were compared with the results of principal component analysis related with logistics. Additionally, Turkey's status in the Logistics Performance Index which was published by World Bank was compared with the data acquired at the end of the survey.

3 FINDINGS AND INTERPRETATION

In this section the acquired data will be evaluated with the intention of finding the effect of textile- clothing companies' logistic activities on competition.

The data related to the evaluation of companies' logistics performances is shown in Table 1.

Table 1. The evaluation company's logistics performance

Logistics Performance Principal Factors	Best Number of Com. / %		Good Number of Com. / %		Average Number of Com. / %		Bad Number of Com. / %		Worst Number of Com. / %	
Infrastructure	56	11,3	158	31,8	132	26,6	139	28,0	12	2,4
Customs	100	20,1	165	33,2	92	18,5	113	22,7	27	5,4
International Distribution	111	22,3	120	24,1	94	18,9	143	28,8	29	5,8
Logistics Competence	76	15,3	218	43,9	127	25,6	59	11,9	17	3,4
Tracking and Tracing	102	20,5	160	32,2	68	13,7	128	25,8	39	7,8
Timeliness	169	34,0	162	32,6	66	13,3	74	14,9	26	5,2

Necessary information is provided to manage effectively of the evaluation of logistic performance and logistic activities. With the aim of paying attention to the problems which occur in relation to the plan, program and process of logistic activities provides the possibility in solving the problems effectively and developing continuously. Additionally it contributes to the areas like company's present and potential market share, provision, purchase, storage, product design, product quality, production and sales level, production and efficiency and proficiency of distribution process, financial results, sales revenue and profitability, investments and returns, customer service. In this sense when answers of the good and best choices are combined in Logistics Performance Principal Factors in Table 1., infrastructure (%43,1); customs (%53,3); international shipments (%46,4); competence in logistics (%59,2); tracking and tracing (%52,7); and timeliness (%66,6) percentages are reached. According to these values "timeliness" and "competence in logistics" are seen as one of the best performances. A great majority of the companies valued "timeliness" factor as best.

The measurements which were taken into account in the Logistic Performance Index of World Bank are:

- Customs: Effectiveness of customs and other customs procedures (the effectiveness of customs formalities which were carried out by border inspection institutions, speed, easiness and predictability of formalities)
- Infrastructure: The quality of trade and transport (ports, railways, roads, information technologies)
- International distribution: Ease in distribution arrangement on competitive prices
- Competence in Logistics: Quality and competence in Logistic services
- Tracking and tracing: Tracing of distributions

- Timeliness: Timelines of distribution on planned time or delivery on the expected time and place

According to Logistics Performance Index 2012 results; Turkey stands on the 27. place with 3.51 / 5.00 points among 155 countries. Turkey stands on the 30. place with 3.50 / 5.00 points among 160 countries in 2014. As it is seen in Table 2, Turkey has reached higher places according to 2010 report in all the criteria of customs, infrastructure, international distribution, quality of logistics services and competence in logistics, tracking and tracing the delivery, timeliness which are the principal factors of logistics performance index. The highest increase was in the area of “tracking and tracing” of delivery among the criteria (UTİKAD, 2012: 1). “Tracking and tracing” of delivery factor is seen at %52,7 points (total of good and best) in Table 1. This information seems to be supporting the results of Logistics Performance Index 2012.

Table 2. Comparison of logistics performance index

Criterion	2010		2012		2014	
	Ladder	Point	Ladder	Point	Ladder	Point
Customs	46	2,82	32	3,16	34	3,23
Infrastructure	39	3,08	25	3,62	27	3,53
International delivery	44	3,15	30	3,38	48	3,18
Quality of logistics services and logistics competence	37	3,23	26	3,52	22	3,64
Tracking and tracing of delivery	56	3,09	29	3,54	19	3,77
Timeliness of delivery	31	3,94	27	3,87	41	3,68

Resource : (Arvis, Mustra, Ojala, Shepherd and Saslavsky, 2012 and lpi.worldbank.org)

The values of transportation systems which the companies use for their product delivery are shown in Table 3. Transport system which the companies use for delivery purposes constitute the most important phase of the infrastructure. To complete the process and understand the from the customer point of view, it is possible by delivery to the end user by proper transport system promptly. In this sense used transport system became an important topic for the industry.

When the Table 3 studied, we see that transport means which the companies use for product delivery from highest to the lowest as being road (%98,2), air (%60,8) and sea (%50,7). It is seen the usage of rail transport as %99, combined transport as %91 for transport system. This condition shows that especially the rail transport needs to be bettered in terms of infrastructure. Apart from this, it is necessary that the ports should be modernized, and the railway connection with the ports provided, private sector train management expanded, rail connection with the Organized Industrial Regions constructed and combined transport developed.

Table 3. Values related to transport systems which the companies use delivery for their products

Used Transport Systems		Number of Companies	%
Roads	Yes	488	98,2
	No	9	1,8
Air	Yes	302	60,8
	No	195	39,2
Sea	Yes	245	49,3
	No	252	50,7
Rail	Yes	6	1,2
	No	491	98,8
Combined Transport	Yes	43	8,7
	No	454	91,3
TOTAL		497	

In addition to these it is necessary to use logistic villages. Among the operational features of logistic villages which can utilize the advantages such as; to be given the opportunity to use more than one transportation means, the opportunity of road transport, to have rail connections, to be provided with direct access with combined transport facilities, ports, inland waterways and airports. As a result of the improvement in these modes and evaluations all transport modes which are suitable for the industry will provide to use them effectively and competitive advantages of the companies will increase.

Another important point which affects the competition is that the delivery method of the products of companies. The results which were obtained related to this matter is shown in Table 4. When we look at Table 4 it is seen that companies use mostly outsourcing (%48,5) for their product delivery. For their product delivery the second method is their own transport and usage of outsourcing with (%40,6).

Companies which are under the influence of globalization and rapid changes in technology needs to provide speed, flexibility, and cost advantage in order to sustain in the intensive competitive environment. To do this, especially producer companies get the other companies do a lot of activities which are outside of their main activities such as providing, transport, stocking, handling, packaging, stock, distribution, in other words prefer using outsourcing. The advantages of using outsourcing for the companies is mainly to focus on main job and to decrease of the cost of the product, to provide customers the opportunity of more secure, cheaper, and quick access and to increase the customer satisfaction.

Table 4. The results which are related to companies product delivery

Delivery Systems Product in Companies	Number of Companies	%
With our own transport	12	2,4
With provider-customer transport	42	8,5
By using outsourcing	241	48,5
With our own transport- by using outsourcing	202	40,6
TOTAL	497	100,0

Especially when we look at the trends in the world markets, clothing industry is also included, we see that the main reasons are shorter order periods, smaller, more frequent and more secure deliveries, different delivery types relating to shelf life, specifications, production and marketing strategies of the product and confidence of short term estimations.

Utilizing outsourcing provides values like obtaining competitive advantage for companies, adding measurable values to the products, developing customer services, helping to open up new markets, providing resources for a certain goal. The structure of delivery channels in the industry affects the ongoing competition.

Very few of textile companies in national level have already established their own national delivery channels. These companies have the highest national sales and the highest sale profits in this way.

Table 5. The study of the effect of delivery methods of product on logistic factors in terms of competitiveness of companies nationally (ANOVA)

Factors	In Terms of Logistics Factors Competitiveness Subscale Nationally			F value	p value
	Factor levels	Observation number	Average		
Delivery method of product to customers	Our own transport	12	1,2273	5,487	0,001**
	Provider/ customer transport	42	1,1515		
	By using outsourcing (3. party logistics)	241	1,2105		
	Our own transport and by using outsourcing	202	1,0216		

**effective on 0,01 significance level

In order to study the effect of the type of product delivery on logistic factors in terms of competitiveness of companies nationally, variance analysis results were shown in Table 5.

When we study Table 5 we see that product delivery methods of company to the customers affects statistically in a major way the logistics factors in terms of competitiveness in national level in textile and clothing industry (p values $< 0,01$).

In terms of competitiveness of companies nationally the values in relation to logistics factors were shown in Table 6.

In Table 6 there is evaluation of logistics variables in terms of national competitiveness of a company. When all the ratios of variables are studied, it is observed that the ratios of “low competitiveness” are higher than the ratios of “high competitiveness. Therefore low competitiveness of the firms gains importance.

Table 6. Evaluation of logistics variables in terms of national competitiveness of the firm

Logistics Variables in Terms of National Competitiveness	(1) Competitiveness high		(2) Competitiveness low		(3) Competitiveness nil		(4)= (1) + (2) Ratios of competitiveness
	Number of firms %		Number of firms %		Number of firms %		%
Fast delivery	175	35,2	216	43,5	106	21,3	78,7
Flexibility of distribution and delivery	133	26,8	310	62,4	54	10,9	89,2
Timeliness	172	34,6	256	51,5	69	13,9	86,1
Reverse logistics costs (reimbursement)	141	28,4	238	47,9	118	23,7	76,3
Tracking and tracing	172	34,6	192	38,6	133	26,8	73,2
Infrastructure	141	28,4	255	51,3	101	20,3	79,7
Customs procedures (International deliveries)	159	32,0	241	48,5	97	19,5	80,5
Logistics competence	123	24,7	298	60,0	76	15,3	84,7
Suitability of product distribution method	143	28,8	249	50,1	105	21,1	78,9
Closeness to EU	184	37,0	260	52,3	53	10,7	89,3
Secure delivery	172	34,6	228	45,9	97	19,5	80,5

When the ratios of “competitiveness” (4. Column, Table 6) were acquired by combining the results of “high competitiveness” and “low competitiveness”, it is observed that the variables of competitiveness have high ratios in general. It is seen that among the variables closeness to EU (%89,3), flexibility of distribution and delivery (%89,2) as having the highest ratios. Timeliness (%86,1) and logistic competence (%84,7) take the second place. When competitiveness ratios evaluated generally it is seen that each of them is over than %73, therefore it is expressed that competitiveness of firms having high ratio according to these variables.

Principal components analysis was done for logistic factor which is thought to explain competition nationally in textile –clothing industry. As a result of this analysis the first of these two acquired principal components explains %54 of principal components total variance. In converted components matrix, customs procedures variable 0,859; prompt delivery variable 0,839; timeliness variable 0,818 and logistics competence variable 0,803 are seen as having high level correlation. Besides geographical closeness to EU, flexibility of distribution and delivery, and suitability of product distribution method have also high level correlation. These values are said to support the results at Table 6.

4 CONCLUSION AND SUGGESTIONS

Industry, in current circumstances, by focusing on technology and knowledge, design, fashion and production of brand products, has the potential of gaining ground significantly. Whence it is not possible to eradicate completely the effects of new developments, expanding mergers, and economic integrations on industry, it is necessary to develop different suitable competition strategies according to changing conditions (Arslan, 2008: 102). One of these strategies logistics applications provide firms a lot of advantages and diversity. This diversity and value which logistic function created is time and location (Ballou, 1999: 11). In this sense logistics affects the customer satisfaction, operating expenses of perceived value of product, and earnings and other performance criteria (Novich, 1990: 48-53).

Developing, changing, renewing and unlimited world trade sustain its effectiveness not only in textile and clothing industry but in all areas as well. Changing form of competition in national level at the present time, to measure the effect of factor which has vital importance for especially logistics industries on other industries, we reached the conclusions which are shown below

- Industries evaluated well the criteria of infrastructure, customs, international distribution, logistics competence, tracking and tracing and timeliness.
- The order of land, air, and sea as the transportation means was reached for the firms.
- It is seen that the firms use mostly outsourcing for their product distribution. The second most important way the firms use for product distribution is the usage of firms own transport and use of outsourcing.
- In terms of national competitiveness of firms, when the logistic variables evaluated, geographical closeness to EU, flexibility of distribution and delivery, timeliness, logistics competence, tracking and tracing and prompt delivery variables take the precedence.
- In terms of national level competitiveness, in this industry, it is seen that the method of product distribution of the firm to customers affect greatly the logistic factors.

In short logistics which gives the opportunity to reach right product to right customer, at right place and time (Kotler and Armstrong, 2004) encompass in the body the functions of vital importance for firms. In this sense correct and effective application of these logistics functions provide a lot of advantages to the firms in terms of competitiveness. If Turkish textile and clothing industry want to have strong competitive edge in the EU, they need to transform from provider country position to “market maker country” by promoting necessary changes. The necessary competitive advantages of the firms encompass the usage of proper transport systems, high technology, to have proper logistics infrastructure, quality products, superior research development and product development efforts, qualified workforce in logistics and other areas, production flexibility and dynamic structure, ability of customer specific production, prompt delivery and service, productivity increase, effective marketing and distribution channels, innovativeness, creativity, unique design, and ability of product development.

In this study the competitiveness of textile- clothing industry in national level was evaluated in terms of logistics. This evaluation must be regarded on national level. At the moment, when it is thought that the economic variables have close ties with each other, a lot of discussed variables on national level must be regarded to be valid in international economic relations.

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