

Logistic and Its Importance in Turkish Food Sector and an Analysis of the Logistics Sector in Turkey

Şule Turhan, Özlem Turan

Abstract—Permanence in the international markets for many global companies is about being known as having effective logistics which targets customer satisfaction management and lower costs. Under competitive conditions, the necessity of providing the products to customers quickly and on time for the companies which constantly aim to improve their profitability increased the strategic importance of the logistics concept. Food logistic is one of the most difficult areas in logistics. In the process from manufacturer to final consumer, quality and hygiene standards must be provided constantly. In food logistics, reliable and extensive service network has great importance and on time delivery is the target. Developing logistics industry provide the supply of foods in the country and the development of export markets more quickly and has an important role in providing added value to the country's economy. Turkey that creates a bridge between the east and the west is an attractive market for logistics companies. In this study, by examining both the place and the importance of logistics in Turkish food sector, recommendations will be made for the food industry.

Keywords—Logistics, Turkish food industry, competition, food industry.

I. INTRODUCTION

TODAY almost in every subject, both on a national and international level a very intense competition is experienced. Now everyone can produce everything and can reach a certain quality level in the goods and services they produce by using similar technologies. Organizations that operate in such an economic structure need to be continuously creative, find new alternatives for cost reduction and increase consumer satisfaction. In this economic structure presented by globalization minimizing total costs has caused logistic services that are dependent on supply chain management and firms that offer logistics services to become more important.

In this study, the place and importance of logistics in Turkish food sector will be examined and recommendations will be made in terms of food sector.

II. LOGISTICS INDUSTRY AND ITS IMPORTANCE

A. Definition of Logistics

Logistics activity is a general concept which has a military origin and has been used related to war and art of war. It consists of subjects such as moving, commanding, and situating, in other words, planning, implementation and evaluation of military troops, equipment and tools [3]. In the

narrow sense, it can be defined as strategic management of total supply chain.

B. Areas of Logistics Activities

Over the years, the definition and the scope of logistics has changed with new developments in technology and economy [7]. Generally, logistics activities that are defined as all of the activities that ensure the flow of products from production facilities to consumption, consists of activities such as transport, inventory management and order processing that is needed for specific targets or market-oriented goods [9]. Some of these activities are orders, collecting, consulting, and insurance, customs management, assembly and installation of production facilities, transportation, storage, marketing, information flow, customer service, carrier selection [4]. Basic activity areas that are realizes in this process are [5]:

1. Transportation
 2. Storage
 3. Inventory Management
 4. Order processing
 5. Packaging
 6. Purchasing
 7. Information management, information flow
- **Transportation:** transporting people, goods and services from one place to another.
 - **Storage:** one of the functions that facilitate the product's movement to the final consumer through distribution channels.
 - **Inventory Management:** involves stock tracking in order to efficiently execute logistics activities.
 - **Order processing:** An indicator of consumer service quality.
 - **Packaging:** During various stages of transportation products may be effected by environmental conditions such as high temperatures or high humidity. Proper packaging is necessary to ensure the product's transportation without damage.
 - **Purchasing:** can be defined as the purchasing of all the inputs that are used in production and production process such as raw materials, materials, tools and equipment.
 - **Information Management:** It is accepted that information has critical importance for ensuring superiority in the market. Therefore, information management is too important to be left to chance.

C. Purposes of Logistics

Logistics activities aim to harmonize material management function (preparing material flow plans, procurement and

Şule Turhan and Özlem Turan are with the Uludağ University, Faculty of Agriculture, Department of Agricultural Economics, Gorukle, Bursa, Turkey (e-mail: sbudak@uludag.edu.tr).

storage and control) with physical distribution function (the dispatch of goods, packaging and storing). In other words logistics aims to transport the goods to the consumers easily by using high level quality standards with a low cost [6]-[8].

Logistics in the modern sense, requires a management framework that aims the realisation of all these goals in a planned and integrated way. Lately, it can be observed that logistics concept has become a strategic function that is directed externally. According to this, strategic logistics is defined as gaining a competitive advantage by organizing the relationships between organizations by using logistics techniques. An effective logistics management is expected to reduce costs, increase production, quality and customer satisfaction. Thus, cause organizations to grow and increase their competitive power.

Turkey gained the world's attention with the progress it has shown in latest years. In the Logistics Industry Report 2013 that has been published in the framework of World Economic Forum, 39 fastest rising markets have been compares. According to the index that evaluates the logistics appeal of countries, in logistics Turkey has been among the 10 fastest developing countries. In recent years, the logistics industry that reached an acceleration that is parallel to the development of Turkey's economy; has been a regional power in the last 20 years by using its geographical advantage. Turkish logistics sector has the biggest fleet in Europe with the 1.500 companies and 46.000 vehicles it has. Logistics sector is expected to reach a 50 billion dollars' turnover in 2023 with an acceleration that is in accordance with Turkey's 500 billion dollars export targets for 2023 [2].

III. FOOD INDUSTRY AND LOGISTICS

Turkish food industry is considered as a leading one among the sectors which have comparative advantage and higher export potentials in the general economy mainly because of providing most of the required inputs from domestic sources. However, it is important, not only to be sufficient for itself in food production but also to be able to compete in the international market. Especially following 80's while the economy was going through a liberalism process; food industry in Turkey was affected from the rapid changes. As a result of the improvements in technology, the food industry with its production structure directed to export, especially some of its subsectors became capable of competing at the international level through some sub-sectors.

Food sector in Turkey is %19.7 of the GDP with 279 million TL. According to the Social Security institution of Turkey 40 377 companies operated in food sector and 607 companies operated in beverages sector in 2012. In 2009, 338 852 people were employed in food sector in 2012 this number increased to 406 091 with a %20 increase. In beverages sector 10 643 people were employed in 2009, in 2012 this number increased to 12 695 with a %19 increase. The demand for food is very important in the development of food sector. In EU where Turkey has the most trade, the share of food expenditures in household expenses is on average %14.5. This share is %30-32 in countries that joined to EU in later years

such as Romania and Lithuania and %10-15 in developed countries such as Germany, France, United Kingdom and Italy. In Turkey, according to the Turkish Statistical Institute in 2007 food and beverage expenditures in household expenditures was %23.8 in 2010 %22 an in 2011 %21. This share was at its lowest in İstanbul with %17.6 and highest in North Eastern Anatolia with 29.7 [11].

In Turkey, logistics sector is open to development as well as food sector. According to the Logistics Performance Index (LPI) which measures the logistic "friendliness" of countries, there are six key areas that can be used to measure a country's score.

- 1) The efficiency of the clearance process with border control agencies and customs;
- 2) The quality of infrastructure related to trade and transport;
- 3) The level of arrangement of competitively priced shipments;
- 4) The quality and expertise of logistics services;
- 5) How well the consignments are tracked and traced;
- 6) The rate at which shipments reach their destination within the scheduled and/or expected delivery time.

According to LPI Turkey moved up from 39th place in 2010 to 27th in 2012, out of the 155 countries in the index, Moreover, it is ranked third in the top 10 upper middle income performing countries. According to the index, Turkey performed better than 3 out of 4 BRIC countries - Brazil, Russia and India. It is also indexed better than most of the countries in Eastern Europe and the Middle East & Africa [13].

While the BRIC economies have attracted foreign investment for some time, alternative markets such as Turkey present increasing opportunities for logistics companies. Although Turkey is smaller in size than BRIC countries, it offers a stable environment and fast growth for the logistics industry as a whole [13].

According to Agility Emerging Markets Logistics Index, Turkey is ranked as the 11th best country in logistics out of 41 emerging markets. The index scores markets in three broad categories on a scale of 1 - 10:

- 1) Market size and growth attractiveness,
- 2) Market compatibility and
- 3) Connectedness

Turkey scored, 6.77, 4.73 and 4.97, respectively, in these categories averaging a total score of 5.80. Turkey has moved up one place and has received a better score than in 2011 where it averaged a total of 5.65 [13].

Another index that can Show the logistics situation in a country is the Linear Shipping Connectivity Index (LSCI). The LSCI mainly measures the containerization of trade and access to containerization transports. Turkey has moved up 9 places from 2010 to 2013, establishing itself at 20th place, surpassing India, Russia, and Brazil. The LSCI is generated from five components [13]:

- 1) The number of ships;
- 2) The total container carrying capacity of those ships;
- 3) The maximum vessel size;
- 4) The number of services and

- 5) The number of companies that deploy container ships to and from a country's ports

Other than Turkey's attractiveness as an emerging market in logistics, Turkey is planning to increase its investments in logistics by 2023. The logistics centers where costs are lowered and efficiency of logistics is increased, is planned to be built all over Turkey. The logistic centers listed below are planned to be built around the Trans-Asian Railway Network in Turkey either by Turkish Railways (TCDD) or the private sector. It is estimated that by 2023 the total freight carried in the villages will reach USD 500 billion. According to TCDD's investment program, TCDD plans to spend TL 514.9 million on building logistics centres. TL 111.4 million has already been spent on the project since 2006 [13].

TCDD is planning to build logistics centers in 18 provinces.

- 1) Istanbul (Halkalı) Logistics Centre
- 2) Istanbul (Yeşilbayır) Logistics Centre
- 3) İzmit (Köseköy) Logistics Centre
- 4) Samsun (Gelemen) Logistics Centre
- 5) Eskişehir (Hasanbey) Logistics Centre
- 6) Kayseri (Boğazköprü) Logistics Centre
- 7) Balıkesir (Gökköy) Logistics Centre
- 8) Mersin (Yenice) Logistics Centre
- 9) Habur (Şırnak) Logistics Centre
- 10) Uşak Logistics Centre
- 11) Erzurum (Palandöken) Logistics Centre
- 12) Konya (Kayacık) Logistics Centre
- 13) Denizli (Kaklık) Logistics Centre
- 14) Bilecik (Bozüyük) Logistics Centre
- 15) Kahramanmaraş (Türkoğlu) Logistics Centre
- 16) Mardin Logistics Centre
- 17) Kars Logistics Centre
- 18) Sivas Logistics Centre

Other than government investments made by TCDD private sector will initiate other logistics centers.

- 1) Ankara Logistics Base
- 2) Tekirdağ Logistics Centre
- 3) Çorlu (Tekirdağ) Logistics Centre
- 4) Marmara Ereğlisi (Tekirdağ) Logistics Area
- 5) Muratlı (Tekirdağ) Intermodal Railway Freight Terminal
- 6) Havsa (Edirne) Logistics Centre
- 7) İskenderun (Hatay) Logistics Village
- 8) Antakya (Hatay) Logistics Centre
- 9) Osmaniye Logistics Centre
- 10) Kocaeli Logistics Village
- 11) Samsun Logistics Village
- 12) Trabzon Logistics Centre
- 13) Şanlıurfa Logistics Centre
- 14) Diyarbakır Logistics Centre
- 15) Konya Logistics Centre
- 16) Bursa Logistics Centre
- 17) Karabük Logistics Centre
- 18) Mersin Logistics Domain Organized Industrial Zone
- 19) İzmir Kemalpaşa Logistics Village

Foodstuffs are critical products. They can spoil, damage health and they can even cause deaths. Especially products such as meat and meat products, fish, milk, yogurt, and cheese

are very sensitive to spoilage and are much more critical. Primarily, the food product should be defined very well and then standards need to be created for storage, transport, and delivery processes. Most foodstuffs have different preservation temperatures. Because of mistakes in planning, information, storage and transport cause high losses and returns. Also, high inventory quantities caused by lack of demand planning activities, logistic costs, and not being able to meet demand because of destroying products with expired shelf life may cause sales losses.

Food production process needs to be tracked and kept safe from raw material procurement to the final consumer. In this process, there are many sectors in production, storage and retail that are responsible for keeping the process safe. A mistake or any lack in the chain effects food safety and the potential to harm human health. Another important part of this chain is food logistics companies. In Turkey and in the world food safety has become an important issue. Food safety is the activities that are performed in the food chain in order to protect the food stuffs from biological, chemical or physical dangers in order to prevent any danger to human health. In this process warehousing, transportation and logistics services emerge at every level [12].

Food logistics, is the protection of foodstuffs in accordance with their characteristics during packaging, transport and storage. Maintenance and control of the tools and equipment that are needed to achieve these conditions is very important. Since, temperature/humidity changes can cause microorganism activities in the physical, sensorial and chemical structures and cause changes, cold chain is very important. The most important element of food logistics is transporting the products to the final consumers without causing a loss in the characteristics of the product. Transporting the good to the final consumer as the first day it was produced is one of the main duties of the logistics industry and the producer. To achieve this, necessary infrastructure and logistics tools are essential. Keeping the cold chain unbroken is also very important [10]. Because of all these conditions food sector is one of the hardest areas of logistics.

IV. CONCLUSIONS

Logistics sector has reached a market of 5 trillion Euros worldwide and 600 billion Euros in the EU. In Turkey, there is potential market of 30 billion dollars which is %10-13 of Turkey's GDP. Rapid changes in the sector and the diversification of solutions bring changes in the structures of organizations. Predictions suggest that in the future firm numbers will decrease with mergers and acquisitions and firms' sizes will increase. The changes that will be caused by all these reasons, are expected to cause an increase in sector risks. In Turkey, 75% of logistics activities are still covered by their internal resources. Turkey, is the waypoint of 600 billion dollars' goods movement between the west and the east, in the heart of Eurasian trade with its highways, railways, seas surrounding it on three sides, airports and distribution centre and is the hub of good and services flow between Europe, the

Balkans, the Black Sea, the Caucasus, Central Asia, North Africa and the Middle East. Because of its strategic location, Turkey has the potential to be the most important and valuable logistics base of this area. And it's of great importance to realise this potential rapidly. The growth that occurred in imports and exports in latest years especially is reflected in logistics sector. Logistics sector heads the sector that has the growth potential in middle and long run. Turnover increases in the sector shows that the sector growth will be 120-150 billion dollars in 2015. Foreign interest in the sector is expected to increase and as a parallel to this foreign capital is expected to continue to [1].

In the world logistics market, new trends take place with the effects of factor such as consumer demands and technological development. Some of these trends can be listed as [1];

- Shorter order cycles
- Smaller, more frequent and more reliable deliveries
- Delivery types that vary according to the shelf life, specifications and sales strategies of the products and the reliability of short term guesses
- Closer relationships with less suppliers
- Increasing use of information technologies
- Outsourcing logistics services

Logistics sector in Turkey has a most advantageous location and a strong logistics web and technology however lack and insufficiency of vehicles and warehouses for refrigerated transportation is a problem.

Foodstuffs can easily be spoiled therefore it is important to meet hygienic conditions from raw material procurement to sales. In order to meet these conditions and keeping them under control it is important to use production and logistics standards that have been accepted worldwide such as Hazard Analysis and Critical Control Point (HACCP), British Retail Consortium (BRC) and International Food Standards. The strength and the growth of the logistics sector depend on effective use of these standards. Therefore, there has been important development in terms of prevention of food and quality loss and supplying products that are not harmful to human health. So food sector supply chain that starts with raw materials and end with final consumers and cost reductive activities has become strategically more important in food sector. Reducing costs in the supply chain has become an important competitive tool for a firm in international markets. Geopolitical elements, security natural conditions, products being prone to spoilage and risks of accidents help the place of countries in the supply chain. Turkey has to increase the advantages it has in these areas.

Food companies should get ready for international competition in cost effectiveness by taking actions in cooperation. Global economy limits the competitive opportunities of local companies. An international company can be more flexible in costs and price balance by existing in many markets. It is predicted that as Turkey nears its target of being an international hub, more foreign companies will enter the market. The first aim should be reaching fastest delivery without allowing the products to be spoiled.

Logistics activities in food supply chain will benefit in the long term from the organization of domestic transportation, cost reducing systems such as big bag and pneumatic transport systems, increasing the number of companies who offer refrigerated containers, encouraging cooperatives in logistics, developing systems that can transport goods with different temperatures and creating an updated and expanded higher education structure in logistics.

REFERENCES

- [1] Anonymous, 2013, Lojistik Sektör Raporu, Müstakil Sanayici ve İşadamları Derneği, İstanbul.
- [2] Anonymous, 2014, Onuncu Kalkınma Planı, 2014-2018.
- [3] Asıcı, Ö.Z., Tek, Ö.B., 1985, "Fiziksel Dağıtım Yönetimi", Bilgehan Basımevi, İzmir.
- [4] Bayraktutan, Y., Ş. Tüylüoğlu, M. Özbilgin, 2012, Lojistik Sektöründe Yoğunlaşma Analizi ve Lojistik Gelişmişlik Endeksi: Kocaeli Örneği, Uluslararası Alanya İşletme Fakültesi Dergisi Yıl:2012, C:4, S:3, s. 61-71.
- [5] Birdoğan, B., 2004, "Lojistik Yönetimi ve Lojistik Sektör Analizi", 1.Baskı, Volkan Matbaacılık, Ankara.
- [6] Gümüş, S., 2013, Lojistik Sektörünün Türk Ekonomisine Katkıları ve Bir Araştırma, Uluslararası İşletme ve Yönetim Dergisi C.:1 S.:3 Yıl:2013, ss. 302-324.
- [7] <http://www.unctad.org> (Accessed on 01/09/2015).
- [8] Kaya, A. Ş., 2003, Lojistik Şirketlerinin Organizasyon Yapıları, İstanbul Üniversitesi, Deniz Bilimleri ve İşletmeciliği Enstitüsü, Yüksek Lisans Tezi.
- [9] Rodrigue, J.P. ve Hesse, M. 2009. "Transport: Logistics", International Encyclopedia of Human Geography, (Der.: Kitchin R., Thrift N.), Volume 1, Oxford: Elsevier, s. 277-284.
- [10] Ünverdi, İ., 2013. Lojistik Sürecinin Her Safhası için Maliyet Bilgisinin Karar Almada Kullanılması: Dondurulmuş Gıda Taşımacılığı Örneği. Yüksek Lisans Tezi, Yaşar Üniversitesi.
- [11] Güneş, E., 2015, Çeşitli yönleriyle Türkiye gıda sanayine ekonomik bir bakış (<http://www.dunyagida.com.tr/>) (15/11/2015).
- [12] Aksu, F., M. Kuşcuoğlu, C. Varlık, Gıda lojistiğinde soğuk zincirin ve izlenebilirliğin önemi, (<http://www.dunyagida.com.tr/>) (15/11/2015).
- [13] Anonymous, 2013, The Logistics Industry in Turkey, Republic of Turkey Prime Ministry Investment Support and Promotion Agency.