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# QUALITY OF EDUCATION AND NATIONAL VOCATIONAL STANDARD IN LOGISTICS IN TURKEY

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Key words: Logistics, Education, National Occupational Standards.

**Abstract:** Logistics is a system that ensures the delivery of products and services to customers around the world. This system covers a wide range of business from planning to delivery. Within this business area, strategic planning, customer service, transportation, purchasing, warehousing, material handling, inventory tracking, demand forecasting management, etc. activities are included.

It is a fact that the employment creation power of logistics, which has such a wide field of work, is also very large. The employment created by logistics has both a qualified and dynamic structure. The factor that limits or expands the employment generation capacity of logistics is education.

The individual aspect of education is undoubtedly a great thing that it brings to the person. However, the training that emerges for an employment has to respond to the sectoral demands. In this sense, it is essential that logistics education responds to the national and international competitive environment and rapid change situations that have emerged with globalization and globalization. Education that will not respond to these situations; As it will not meet the needs and expectations of the sector, it will stay away from creating employment.

Logistics, which is a newly developing sector in our country as well as in the world, will become the leading sector in line with the developments worldwide. For this reason, qualified workforce, which is the need and demand of the sector, has to be prepared by educational institutions. In our country, secondary and higher education institutions are making a great effort in this regard.

Considering that logistics does not only consist of logistics, but can also be a leader in more than one sector, there is no doubt that our country, which has chronic problems in unemployment, can also contribute to the solution of this problem.

#### LOGIN

Logistics is an area that has gained more importance than ever, especially with globalization. Globalization has brought logistics to the forefront much more than before, in terms of the supply of goods on the one hand and the increase in competition on the other. Competition is experienced both in product quality and, accordingly, in cost increases related to procurement and transportation. Product quality or producing quality products is not

enough to take place in the market alone. At this point, detailed studies in logistics and its sub-units become mandatory.

For this reason, employers of all sectors involved in production tend to employ qualified and expert labor that will reduce logistics costs. While this orientation increased the importance of the Ministry of National Education and universities to logistics education, it was instrumental in opening schools, departments and programs with logistics. Although the opening of these programs is positive for the logistics sector, it also caused different problems in terms of the required competence.

In addition, schools related to logistics education were opened in secondary education. The first logistics education within the scope of secondary education was opened in the 2005-2006 academic year as Mehmet Emin Horoz Vocational and Technical Anatolian High School to provide high school education. After this, other schools were opened within the Ministry of National Education and providing logistics education at the secondary education level. This number reached 118 in the 2017-2018 academic year.

As it is known, the first logistics department in our country at the undergraduate level started education at Istanbul University as the School of Transport and Logistics in the 1999-2000 academic year. This was followed by many state and foundation universities. In fact, for the 2017-2018 academic year, 142 associate degree programs at 73 universities, 92 undergraduate programs at 64 universities, 44 graduate programs and 6 doctorate programs at 23 universities have become available.

These developments regarding logistics are of course positive developments. However, it is not possible to say that these rapid developments in education have made rapid progress in terms of quality as well. Rapid development, especially in the field of education, can also be the source of quality-related problems. In this sense, among the reasons affecting the quality, different courses in education and different course contents come first. In response to this, it is essential to establish a logistics education standard, at least among institutions providing logistics education. Moreover, Vocational Qualifications Authority took an active role in this matter and prepared and published National Occupational Standards together with sector representatives. Important steps should be taken both to cooperate between higher education institutions, to adapt to the Bologna Process and to develop the field qualifications of "84-Transportation Services" within the scope of the Turkish Higher Education Qualifications Framework (TYYÇ).

In this study, the quality of education and the national occupational standard in logistics in Turkey are emphasized. However, it is beyond the explanation that it is essential for universities providing logistics education in Turkey to establish a common logistics education standard regarding logistics education. This occupational standard must be in line with the National Occupational Standards and Europe within the scope of Vocational Qualification, and must be established by taking into account the Bologna Process.

## 1. THE CONCEPT OF LOGISTICS AND THE HISTORICAL PROCESS OF LOGISTICS

#### 1.1. Logistics as a Concept

Logistics: It is the process of planning, implementing and controlling the efficient, efficient and cost-effective storage and flow of raw materials, semi-finished products, finished products, services and related information from the source to the point of consumption in order to meet customer needs (Acar, 2010: 5). The Turkish Language Association (TDK, 2019) has defined the concept of logistics as "the effective and efficient planning and implementation of the transportation of all kinds of products, services and information flows from the point of departure to the destination in order to meet the needs of individuals".

The word logistics comes from the Greek word "logisticos", which is a combination of the words logic and statistics. The meaning of the word; statistical logic. The word "Logistikos", which is the Greek word for logistics, means "calculation science", "computation skillful", but is accepted as "logical calculation" as a combined meaning (Wassenhove, 2006: 475). Besides, in Greek, the "logic" part of the word logistics means "calculation"; It is also stated that the "tics" part means icon (picture) (Tepic, Tanackov, & Stojic, 2011: 379). From this point of view, it is possible to say that the etymology of the word logistics is "calculation and picture" or "numerical skills through image" (Tepic et al., 2011: 383).

In military literature, logistics has been used in the sense of "the art of transporting, supplying and placing military units in the right places", carried out by officers called "Logistikas" (Wolff and Yıldız, 2018: 188). However, it is also known that in Napoleon Bonaparte's army, the people responsible for finding accommodation for the soldiers were called "logisticians" (Azmia, Hamid, Hussin, & Ibtishamiah, 2017: 73).

According to Keskin (2014), logistics: "The main logistics paradigm, which is seen simultaneously with the existence of living things in nature, is used to support all social and individual activities of human beings, starts with the identification of needs, ends with the disposal of the needs after they are disposed of, and is used to support all social and individual activities of human beings. All actions consisting of at least three operations between activities"

#### 1.2. Historical Process of Logistics

The history of logistics is as old as humanity. The instinct to survive, which is the basic need of people, naturally revealed the existence of logistics. For this reason, logistics has existed since the moment humans existed. The fact that people have to undertake many needs, both individual and social structure, security and nutrition, is also the reason for their logistics activities. Another reason for the existence of logistics is that the natural resources in the world are not evenly distributed and accordingly, they are transported to the place where they are needed when needed.

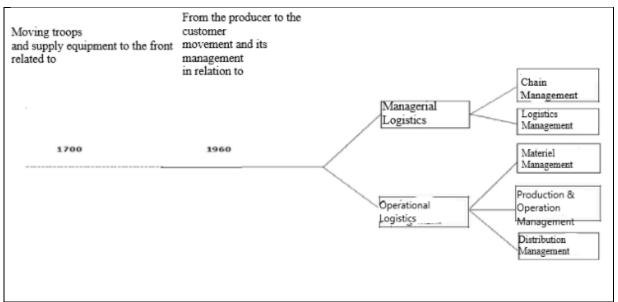
There are those who state that the foundations of logistics are based on the Bronze Age (Tepic et al., 2011: 379) as well as those who base it on Mesopotamia and Egypt. Especially the process of building the Egyptian pyramids is considered a turning point for logistics (Pelletier, 2013: 197).

In the historical process, logistics took place primarily in military terminology. In the institutional sense, logistics has emerged in military studies. In particular, the provision of military materials, food, clothing and health support services to the military units before, during and after the war, this service includes the storage, transportation, distribution, maintenance of goods and materials, etc. activities are the activities of the logistics field. In this sense, it is possible to accept logistics as a must for military activities (Koban and Yıldırır Keser, 2015: 57). As the institutional dimension of logistics in military activity, the activities of Alexander the Great in his conquests from the Balkan geography to the interior of Asia are generally shown. Likewise, it can be thought that the Roman Empire and the Ottoman Empire had a huge logistics organization.

In addition, it is possible to accept the caravans that organized trade in the first and middle ages as the first services of logistics. In the world of commerce, logistics gained an institutional dimension with the Industrial Revolution. While the new rapid production technologies necessitate the supply of raw materials, the similar obligation experienced in the transportation of production to different regions has expanded the field of logistics. Therefore, institutions and organizations with commercial activities had to make logistics-related plans while determining their short, medium and long-term goals and objectives.

Scientific analyzes by the academic discipline began to be made in the 1960s. Donald Bowersox is the first person to examine logistics or physical logistics as a strategic focus in the context of the relationship between logistics and marketing and write it in the Journal of Marketing in 1969 (Grant 2012: 254-255).

According to Keskin (2014: 26), Swedish Antoine-Henri Jomina used logistics for the first time in an academic sense in 1838, in his work The Art of War, which is a research on Military Administrative Sciences. In the aforementioned first study, Jomina talked about the trilogy of strategy, land tactics and logistics. Logistics in today's sense was first used by Donald Bowersox (Keskin, 2014: 26). In Figure 1 below, the historical process of logistics is expressed.



**Source**: Grohn Engineer; From http://www.transforum-eu.net/IMG/pdf/Logistixs.pdf by Koban and Yıldırır Keser, 2015.

Figure 1. Historical Process of Logistics

It is possible to summarize the stages of logistics under the heading of important events as follows:

- -The construction of the Egyptian pyramids in the 2700s BC (BC),
- -B.C. The construction of Greek rowing ships in the 300s,
- -The transportation of the columns to Cordoba from all over the Islamic geography of that period, on the occasion of the construction of the Cordoba Mosque in Andalusia in the 700s after Christ (AD),
  - -The establishment of the international network known as the Hamburg-Germany Hanseatic League in the 1200s,

Establishment and active operation of the progressive postal service in Europe in the 1500s,

Discovery of new road transport and railroad in the 1800s,

- -1940s I. and II. Carrying out studies on military logistics in World War II,
- -Invention of the sea container in 1956,
- -1970-1980 Identification of new concepts on logistics concepts and procurement by Taiichi Ohno at Toyota Motor Company of Japan,

As logistics concepts that attach special importance to distribution from the 1990s to the present; development of rapid response (QR) and efficient consumer response (ECR) technologies,

-providing the supplier-end customer chain (Cuturela and Monole, 2013: 188-198).

#### 2. LOGISTICS MANAGEMENT AND QUALITY COMPONENTS

As a generally accepted idea, 7 truths of logistics can be mentioned. These 7 truths are: the right product, in the right quantity, in the right conditions, in the right place, at the right time, at the right cost, to the right customer (Yıldıztekin, 2007). In addition, logistics is an element that affects the living standard of the society and unites a large segment of the country's economy in terms of increasing efficiency, activating distribution, prioritizing the use of energy resources.

#### 2.1. Logistics Management

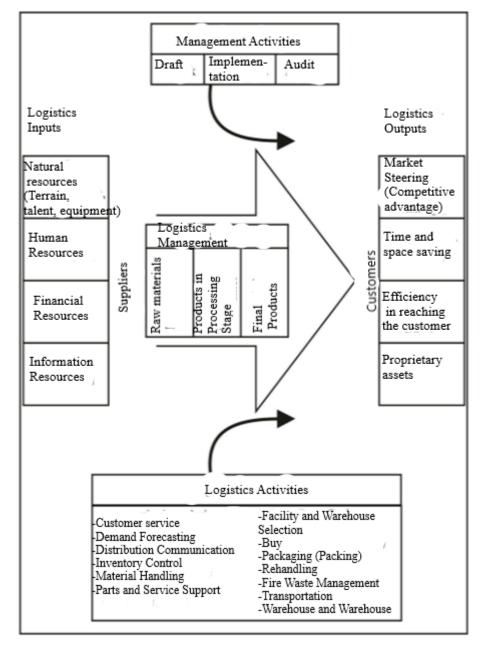
Logistics management has gained a different dimension with globalization. The prominent aspect of this dimension is competition. Therefore, logistics management is also a competition management. However, within the scope of logistics management; There are elements such as transportation, storage, packaging, handling, customs clearance, insurance of products, supply and demand planning, fleet management, ensuring the added value of the product and stock management. Logistics management has to reveal an independent and collective management approach for each of these elements and to plan, implement and control them.

The basis of logistics management is to reach the lowest costs and meet customer expectations while managing these elements. For this purpose, logistics management; quality, reliability, fast response, consistent behavior, low stock cost (least stock), low cost transportation by making common transportation plans (www.loder.org.tr).

#### 2.2. Quality Components in Logistics Management

According to Lambert, Stock and Ellram (1998: 5), logistics management is a three-stage process. In these three stages; transportation of raw materials, semi-finished products and ready-made parts to the production environment logistics inputs; then transporting them to workstations and workbenches, ie in-house material flow and handling; Finally, there are components in the form of delivery from the exit warehouse to distribution channels and customers.

In this sense, the components that ensure quality and continuity of quality performance in logistics; It can be summarized as supporting the attitude of customer requirements, timely delivery, error-free calculation, no unnecessary excess stock, no damage in handling and transportation, complying with the order process, providing reliable suppliers, creating accurate inventory information and creating defined methods and instructions (Lambert, Stock, & Ellram, 1998: 5). Figure 2 below presents the logistics management and quality components.



Source: Lambert, Stock and Ellram, 1998: 5.

Figure 2. Logistics Management and Quality Components

#### 3. LOGISTICS EDUCATION IN THE WORLD AND IN TURKEY

Logistics activities began to be dealt with scientifically in the early 1900s. Activities that were initially in the form of military purposes and the transportation, supply and maintenance of materials and personnel of the armies gained a different dimension with the Industrial Age. In this different dimension, the distribution of production economy products, especially agricultural products, has also been effective (Grant, 2012: 5). With globalization, logistics has become the most important element of commercial life.

While this change in logistics transforms logistics into a solid state instead of military and civilian life, it also paved the way for its emergence and development as a science (Erkan, 2014: 47). The spread of the Fordist production system in Europe, which started under the

leadership of Henry Ford, also affected this process positively. This influence has highlighted the supply, transportation and delivery activities of raw materials, semi-finished and fully processed products and customer relations functions in parallel with the mass production system (Erkan, 2014: 46). Despite all these developments, worldwide negativities caused logistics to be limited to military discipline issues and the supply, maintenance and transportation of military facilities, materials and personnel until the 1950s (Ballou, 2007: 333; Heskett, Glaskowsky and Ivie, 1973).

After the 1950s, logistics has been accepted as the system that provides the movement of the product from the point where it is produced to the point where it is consumed. The main factor in the development of logistics and the emergence of scientificity is the phenomenon of globalization (Szymonik, 2014: 1).

#### 3.1.In the World and Logistics Education

The logistics industry is the service industry. For this reason, unlike other sectors, it is a complex, technology-intensive and labor-intensive sector in terms of structure. When considered in the world in its age, it will be seen that the logistics sector is one of the service sectors that creates employment especially in recent years. At this point, it is very clear that the sector needs more workforce and will hear it in the future (OECD, 2002: 43).

Logistics sector creates the need for software and technical equipment more and more every day, depending on technological developments, and needs a qualified workforce to adapt to these new tools and equipment (Oda, 2008: 67). The logistics sector has become the most important actor of international trade and the most important element of the international power balance (Yıldırır, 2011: 168). The importance of logistics management all over the world makes it difficult for universities to train qualified workforce.

There are two models in logistics education around the world, the Engineering model and the Business model (Hayward & Omurtag, 2003).

The basis of the engineering model is based on efficient workflow, meeting customer needs, and designing innovative solutions with service level, low cost and high quality in order to improve logistics performance. In the engineering model of logistics, demand forecasting, purchasing, transportation, warehousing, maintenance, etc. subcomponents are designed through mathematical and technical operations.

The essence of the business model is based on meeting the demands of customers from any part of the world and from any business through information and communication technologies. In the business model of logistics, it is important to keep this distribution and sales network constantly active.

#### 3.2. Logistics Education in Turkey

At this point, logistics is accepted as a branch of science in many universities in Turkey. In this direction, in accordance with the practices and demands of the sector, education is given at the level of associate degree, undergraduate, graduate and doctorate in universities in Turkey. The numbers related to these have been given before.

In general, in the logistics education in our universities, courses such as transportation management, warehouse management, stock management, customer relations management, production management, order management, material and stock tracking and management, information technologies, logistics law, foreign trade, international resource use are taught (Altuğ, 2006). 2013:210). However, it can be said that logistics education is not perfect and has some deficiencies. The most important of these deficiencies are that the necessary preparations have not been made, that it has not been classified according to the needs of the sector, and that the teaching staff does not consist of instructors trained in logistics.

Despite all its deficiencies and not reaching the targeted level, logistics education in Turkey strives to prepare a competent and expert workforce for the sector. This astonishment yields positive results. In this sense, the people who take this training will be able to focus on production, material planning, stock management, transportation, warehousing, customs, customer services, domestic and foreign purchasing, import-export operations, e-commerce, logistics activity sales, marketing, finance, foreign trade, demand forecasting etc. works in departments (Şahin, 2018: 82).

Logistics education in Turkey is also carried out by the Vocational Qualifications Authority, which was established in 2006 (Tanyaş, 2018). Vocational competency practice is a new practice in Turkey. On 21.09.2006, the Vocational Qualifications Authority Law No. 5544 was accepted in the parliament and the Vocational Qualifications Authority started its activities legally in 2006.

With professional competence, it is aimed to ensure that the professions are carried out by competent people and to make the workforce qualified. As a matter of fact, in Article 4 of the Vocational Qualifications Authority Law No. 5544, the aims and objectives of the Institution as its duties and powers are explained as follows (Resmi Gazete, 2006):

- a) To prepare, develop, implement or have it made, and supervise annual development plans related to the national vocational qualification system; make arrangements for them,
- b) To determine the professions whose standards will be determined and to determine the institutions and organizations that will prepare these standards.
- c) With the Higher Education Council in order to provide education and training in accordance with national vocational standards in higher education institutions providing technical and vocational education subject to the Higher Education Law No. 2547; To cooperate with the Ministry of National Education in order to provide education and training in accordance with national vocational standards in secondary education vocational and technical education institutions.
- *ç)* To determine the principles of national qualifications in technical and vocational fields, based on national occupational standards.
- d) To determine the institutions that will accredit education and training institutions and programs in the field of national vocational qualifications.
- e) Within the scope of the examination and certification system; To determine the authorized institutions that will certify the competence and to provide certificates to those who are successful in the exams.
- f) To determine the accuracy of the vocational qualification certificates held by foreigners who want to work in Turkey.
- g) To develop national vocational qualification standards in accordance with the developments in the world and in technology, to raise qualification standards and to ensure their recognition in the international arena.
- ğ) To ensure that the necessary qualifications for horizontal and vertical transitions between professional fields and sectors are determined.
- h) To cooperate with similar institutions and organizations in other countries, to purchase services, to develop and implement projects, to engage in training, research, conferences, seminars and publications.
  - *i)* To support and encourage lifelong learning.
  - *i)* To carry out all kinds of other works within the scope of its activity.

In accordance with this duty, authority, purpose and objectives, Article 21 of the same law has set forth the issue of preparation and enforcement of national occupational standards (IAS). Related article provision (Resmi Gazete, 2006):

- (1) Occupational standards are prepared by institutions and organizations assigned by the Authority. Occupational standards must comply with international documents related to vocational qualification levels. These standards are reviewed by industry committees and those found appropriate are submitted to the Presidency to be presented to the Board of Directors.
- (2) Occupational standards approved by the Board of Directors become national occupational standards after their publication in the Official Gazette.
- (3) The occupational standards in force are re-evaluated at the latest every five years. Occupational standards deemed necessary are renewed according to the standard preparation procedure. Acceptance and publication of the amendments are subject to the procedure specified in the second paragraph.

Within the framework of this law, 26 sectors have been created and IASs have been determined to belong to these sectors. IASs related to logistics are handled within the "Transport, Logistics and Communication" sector. At this point, Vocational Qualifications Authority has determined 857 IAS. In the Transportation, Logistics and Communication sector, where logistics is involved, 81 UMS have been determined.

#### **CONCLUSION**

The logistics sector is both the leading sector and the dynamo of economic life. While this situation creates a demand for human resources on the one hand, it creates a demand for specialization at the point of continuous competence on the other hand. Another aspect of the sector is the rapid and continuous change of position and situation in parallel with the developments around the world. On the other hand, competition is the most important feature of the logistics industry. These factors constantly change the demand for labor. In the light of these factors, it can be said that logistics education has a non-stationary structure and is in constant change and development.

This structural situation of the logistics sector necessitates the preparation of educational content and materials faster and according to changing conditions for State and Foundation universities providing logistics education in Turkey. The structure of our country's universities and especially the decisions taken in recent years are in a position to respond to this rapid change in the logistics sector.

Logistics education in Turkey is at a level to compete with the world both in terms of quality and quantity. However, it is a fact that there is much to be done in this field. At least, updating the contents of logistics undergraduate and associate degree programs both in practice and in accordance with the conditions of the day, equipping the teaching staff of logistics departments and programs about current issues, making computer use (package program, etc.) more common in logistics programs, foreign language in logistics programs. In particular, it is necessary to demonstrate and teach English at intermediate and higher levels, and to encourage academic careers in logistics.

The most important point that should not be overlooked is that logistics has the power to create employment. The employment creation power of logistics, unlike many other sectors, has a geometric dimension, not an arithmetic one. Accepting logistics as the pioneer of development and making incentives and guidance in this direction is a must for every developing economy.

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