

## Infrastructure and logistics for economic activity of states

Infraestructura y logística para la actividad económica de los estados

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*Fecha de recibido: 2020-11-07*

*Fecha de aceptado para publicación: 2020-12-10*

*Fecha de publicación: 2020-12-15*



### Abstract

The article reveals that each of the world's leading countries aims to develop economic ties with the world's leading countries through transport. It aims to create transport and logistics centers and the development of transport and logistics systems. The main opinions of scientists on the processes of development of transport and logistics centers in the country are considered. It is emphasized that logistics centers promote the development of a new direction of transportation. It is about intermodal transportation. Through close cooperation between transport companies that are part of the logistics center provide an opportunity to plan an international transportation scheme in order to optimize the use of certain types of transport resources and vehicles. Methods of comparative analysis, abstract and logical method are used for better analysis of the main indicators that characterize the economic activity of the country. Peculiarities of approaches to the general classification of transport and logistics centers are revealed. The indicators of the global competitiveness index of the world's leading countries in 2019 are analyzed. An analysis of the Top 10 economies of the world by LPI in 2012-2018. The main positive changes in the economy of the country where the transport and logistics center is located have been identified.



**Keywords:** Transport and Logistics Center, Transport and Logistics Network, Logistics, Logistics Center, Globalization.

## **Resumen**

El artículo revela que cada uno de los países líderes del mundo tiene como objetivo desarrollar lazos económicos con los países líderes del mundo a través del transporte. Tiene como objetivo la creación de centros de transporte y logística y el desarrollo de sistemas de transporte y logística. Se consideran las principales opiniones de los científicos sobre los procesos de desarrollo de los centros de transporte y logística en el país. Se enfatiza que los centros logísticos promueven el desarrollo de una nueva dirección de transporte. Se trata de transporte intermodal. A través de la estrecha colaboración entre las empresas de transporte que forman parte del centro logístico brindan la oportunidad de planificar un esquema de transporte internacional con el fin de optimizar el uso de ciertos tipos de medios de transporte y vehículos. Se utilizan métodos de análisis comparativo, método abstracto y lógico para un mejor análisis de los principales indicadores que caracterizan la actividad económica del país. Se revelan las peculiaridades de los enfoques de la clasificación general de los centros de transporte y logística. Se analizan los indicadores del índice de competitividad global de los principales países del mundo en 2019. Un análisis de las 10 principales economías del mundo por LPI en 2012-2018. Se han identificado los principales cambios positivos en la economía del país donde se ubica el centro de transporte y logística.

**Palabras clave:** Centro de Transporte y Logística, Red de Transporte y Logística, Logística, Centro Logístico, Globalización.



## Introduction

Globalization processes and the conditions of the competitive environment in which the world's leading countries currently are, determine the significant advantages of each of the existing countries, ie governments are looking for models and developing strategies for economic development. This process can improve the socio-economic situation in the state. Today, significant competition can be observed in the transport market, as well as during the introduction of new transport technologies, which will take an important place among other countries. Every country of the world, regardless of how economically developed the latter is, cares about the importance of using transport and logistics systems, which in the future will lead to integration with the World Transport System. Each of the world's leading countries aims to develop economic ties with the world's leading countries through transport, which will aim to create transport and logistics centers and the development of transport and logistics systems.

The governments of the world's leading countries are unanimous in their views on increasing economic activity through transport and logistics centers, which are further integrated into transport and logistics systems. With the help of the transport and logistics systems it is possible to uninterrupted development of trade relations between countries. Such development leads to the creation of favorable conditions for the movement of various services, goods, labor, capital, which can lead to economic growth of the country.

It should be noted that not all countries of the world have created ideal and favorable conditions for the formation and development of transport and logistics centers. In general, in many countries of the world, the transport network needs significant modernization, as well as significant improvement of transport services, especially with regard to international traffic.

## Literature review

The world's leading countries carry out domestic and foreign trade with the help of transport and logistics centers that. The logistics centers lead to an improvement in the economic potential of the state where they are located. Significant amounts of currency pass through the logistics centers, from which the tax is further deducted. All funds go to the state budget. And as a result, this money can be used to improve the socio-economic development of the region and the state as a whole.

With the help of transport and logistics centers (hereinafter - TLC) are carried out loading and

unloading operations, which consist of: transshipment, cargo processing and redirection of goods. The most important project that the governments of the world's leading countries may be interested in is the creation of regional transport and logistics centers, the mechanism of which is the use of public-private partnerships. They operate on a commercial basis.

It should be noted that the concept of TLC can be considered as a "multifunctional multimodal terminal complex". So, TLC can be created at the borders of transport corridors, as well as when using transport hubs to optimize and service the movement of goods within a particular region. The problems mentioned in this study are reflected in the works of many scientists who in their research considered the creation of transport and logistics centers, which can later be transformed into transport and logistics networks and systems.

At the present stage of development of logistics and transport services, effective management of the logistics supply chain has become a decisive factor in the success of international traffic. An increasing number of companies are radically changing their organizational and commercial approaches. This is largely due to the restructuring of the services industry, especially in the transport system, where many traditional providers, that intended to provide transport services in connection with integration processes, have changed the scope of their activities, ie began to provide logistics services related to the transport system.

Due to the fact that they have significant experience and global networks, they are approached by an increasing number of customers and this has become a clear trend in international trade and services (Konovalova & Kotenkova, 2013).

Logistics centers promote the development of a new direction of transportation - intermodal transportation, because through close cooperation between transports companies that are part of the logistics center provide an opportunity to plan the scheme of international transportation and thus optimize the use of certain types of transport resources and vehicles.

An important factor in the creation and operation of transport and logistics centers is the cooperation and development of various levels of a particular type, including national and international, which in turn contributes to the rational redistribution of cargo, which is an important component in the supply chain (Mikhailov, 2014).

The transport and logistics center should be equipped with the latest systems that allow to



reduce the supply chain, increase the maneuverability of supplies, optimize trade flows. This system allows to form technical requirements to the warehouse system, the purposes are established and criteria of its rational functioning which lead to revision of conditions of processing of cargo are defined (Dykan, 2006). In addition, it is necessary to single out measures by which it is possible to achieve effective work of TLC, ie they should be both national and local in nature. It will aim to improve the quality of services: information, transport, warehousing.

The main attention be paid to: development of service systems of transport business; adoption and implementation of a single standard for information transfer; development of modern navigation systems that will carry out optimal monitoring of transport and freight flows; development and implementation of EDI system based on international standards; identification and development of modern information support systems via the Internet (Timoshchuk & Melnyk, 2012).

While creating a TLC, the main goals that governments are trying to achieve when they aim to create transport and logistics centers are:

1. Ensuring coordination and interaction of modes of transport and other participants in the transport and logistics process;
2. Ensuring high quality transport and logistics service;
3. Information and analytical support along the entire route of goods and cargo;
4. Ensuring the management of end-to-end inventory flows;
5. Reduction of general transport and logistics costs due to the introduction of advanced technologies based on the principles of logistics.
6. Ensuring the maximum synergetic effect on the basis of logistical coordination and coordination of economic interests of TLC participants and business partners (Tyulyubaeva & Koshekeev, 2013).

Despite the significant amount of research in this area, the question of the importance of the development of transport and logistics centers and how their stable and efficient development affects the stimulation of economic activity of the country still remains unexplored.

#### Aims

The main aim of this study is the importance of the development of transport and logistics centers, as well as identifying the main benefits of creating and operating transport and logistics centers in the country and determining their role in creating a socio-economic effect that directly affects the economic activity of the country. transport and logistics center.

#### Methods

Data from Trading economics (2020a-2020l), World economic forum, The World Bank (2018) were used to study the main indicators of economic activity of countries. The following methods were used in the data analysis: generalization method to identify the peculiarities of approaches to the general classification of transport and logistics centers; method of comparative analysis of global competitiveness index indicators; top 10 economies in the world by LPI in 2012-2018; abstract-logical method - for analytical generalization and formulation of conclusions.

#### Results

Modern economic relations that arise on the world stage between the countries of the world are aimed at improving certain priorities, ie customer orientation, or rather reorientation from the manufacturer's market to the buyer's market. The decisive factor here is the possibility and effective combination of the production process and individual purchasing preferences.

The consequence of these processes are rapid changes in customer preferences, their requests regarding quality, speed and changes in supply. An important feature in the formation and development of TLC remains the strengthening of integration processes between countries, especially in the context of WTO enlargement, namely when there is a convincing opportunity to locate production in countries with relatively cheap labor and lower tax rates, and the development of international trade has opened up access to cheaper resources.

It is important to note that a significant number of researchers highlight an important problem that arises during the formation and implementation of TLC, namely the lack of a common classification of transport and logistics centers. Many scientists in their works identify three main approaches to addressing this issue: European, Belarusian, Russian (Table 1), which leads to different views on this issue (Tankovich & Kukharev, 2012).

**Table 1.** Features of approaches to the general classification of transport and logistics centers (Belarusian, European, Russian)

№	Basic approaches
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	European, Belarusian	Russian
1.	The usage of several modes of transport, the usage of general technology of cargo processing	International TLC interacts with all objects of the international logistics system, optimizes intermodal transportation.
2.	Location on the territory (or in the immediate vicinity) of transport nodes of main roads.	The national (domestic) TLC contacts with both international and national logistics systems, solves the problem of strategic cargo flow management, coordinates the activities of regional TLC.
3.	Availability of multifunctional warehouses that provide accumulation, processing, storage of goods, service and commercial service:	Regional TLC (can be both international and domestic) interacts with other regional, as well as with local-node TLC. Operates within its region.
4.	Operation of freight forwarding companies that provide comprehensive services.	Local-node TLC (within the region, city, complex or district node) is a concentrator of information resources, accumulates and implements the technological functions of all transport nodes in its sphere of influence.
5.	Involvement of information and logistics companies in the TLC, providing information support of the process of transportation, storage, transportation, etc.	A separate TLC (local, departmental, corporate, etc.) solves the problem of a lower and more specific level of service.
6.	Application of the latest technologies in the planning, organization and management of inventory, transport, service, information and financial flows.	The transport-technological center of certain types of transportation can be equated to branch automated control systems.

**Source:** compiled by the author based on the source: Tankovich and Kukharev (2012)

According to the analysis, it can be noted that the classification used in Russia is assessed only by the structural and hierarchical features of the TLC without taking into account the possibility of their adaptation to the international transport and logistics system. The Belarusian approach is extremely similar to the European one. It aims at the same principles and approaches that are based on the effective application of technical advances and innovative technologies. The focus of TLC is to ensure maximum synergy from the transport and logistics process.

Despite this, the Republic of Belarus lags far behind the European approach, namely: the presence of terminals of a certain category; the number of specialized specialists; distribution of logistics outsourcing; technical condition of existing transport and transport corridors; capacity of customs and border checkpoints.

If we consider the creation of TLC in other countries, then in Germany the construction of TLC is characterized by the following features: there is significant government support at all levels; the federal budget participates in the process of financing investments with the help of Deutsche Bahn AG (German Railways); there are targeted grants and loans for specific investments (Tityukhin, 2011).

If we briefly describe the German model of development and formation of TLC, the latter involves the participation of the state in two

important phases: planning, implementation of TLC development projects. Transport and logistics centers in Germany are managed through supervisory bodies, which are created with the help of various organizations that are simultaneously participants in the project: investors, investment consortia, development companies, municipalities, associations and unions.

In the EU large transport and logistics centers are usually set up with the support of states. At the same time, some transport and logistics centers were formed using the principles of strategic public and private partnership. The EU has built a three-dimensional structure for transport and logistics centers, there is or is not a certain appropriate part, depending on certain TLCs, as well as their location and purpose of operation.

Austria has adopted a special program for the development of transport and logistics infrastructure, which provides state assistance in optimizing logistics chains of cargo delivery. The basis for this was the removal of economic constraints in the planning of mixed transport, informatization of logistics chains, improving transport links with remote regions, increasing the efficiency of transport infrastructure (Nikitenko, 2008).

In Belgium, there are no government agencies that coordinate the work of transport and logistics centers. At the same time, there are non-governmental organizations that assist investors in



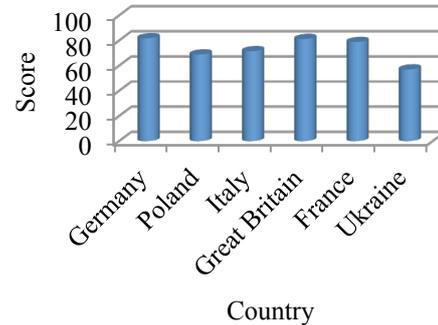
the creation and operation of transport and logistics infrastructure. The internal structure of logistics companies in Belgium specializes not in the geographical principles of the final destination, but in the characteristics of the goods.

For example, one of the largest Belgian TLCs - Katoen Natie has 85 main divisions specializing in the delivery of petrochemical products, specialty chemicals, consumer goods, engineering and automotive products. In turn, each of these units has a network of more specialized departments. In this case, any unit provides services for transportation, packaging, sorting, storage, maintenance and registration of goods (Vashchilo, 2014).

Today there is a trend in the world - to improve technologies that are aimed at freight. So, it is so due to the concentration of traffic flows and the growth of containerized transport through intermodal transport corridors. It is the only global transport network of the 21st century. Its formation and operation has become one of the main goals of the transport policy of the countries which are located in the East Asia. In the countries of Western and Central Europe, where the communication system is more developed in contrast to the countries of East Asia, the process of development, formation and effective functioning of the basic system of transport corridors has already been completed.

To better understanding the existing issues, it is necessary to analyze the current situation of the transport sector, which determines the direction of creation and development of TLC, which in the future has a significant impact on the economic activity of the country in which the latter are located. The main criterion when deciding on the

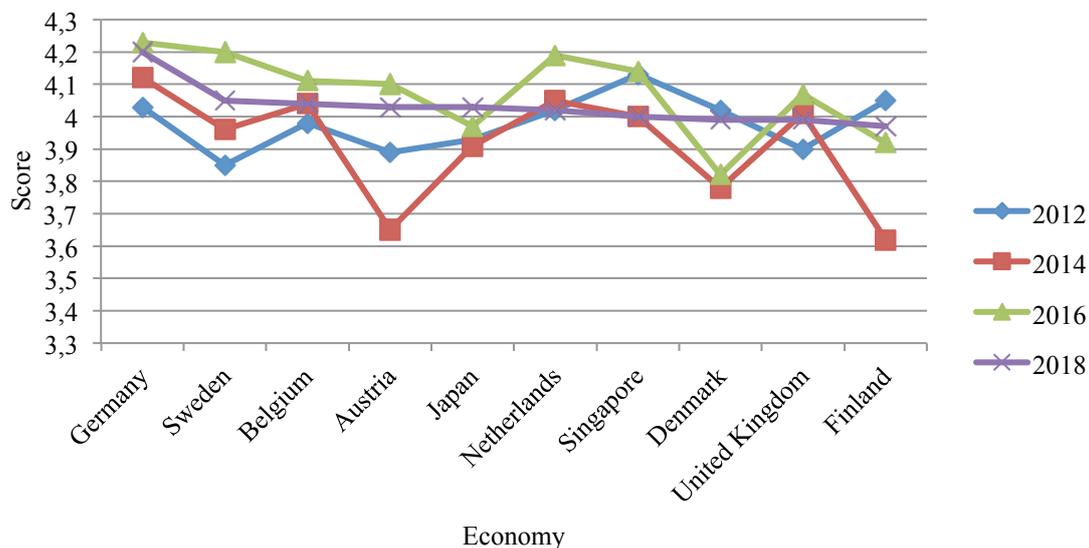
feasibility of creating transport and logistics centers is the existing competitiveness index, with the help of the latter it is possible to determine the feasibility of creating a TLC in a country (Figure 1).



**Figure 1.** Global Competitiveness Index of the world's leading countries in 2019  
**Source:** Trading economics (2020a-2020l)

The analyzed data show that in the global ranking of competitiveness among the countries surveyed, the highest indicator is occupied by Germany with 100 points, the country reached 81.80 points and thus took 7th place in the ranking among 140 countries, then the United Kingdom - 81, 20 points, ie 9th place, France - 78.81 points and is 15th place, Italy - 71.53 points, ie 30th place, Poland - 68.89 points, which determines the occupation of the country 37 steps. Ukraine scored 56.99 points in this ranking and was in 85th place.

In recent years, the world's leading countries with high incomes continue to occupy leading positions in the LPI ranking (Figure 2).





**Figure 2.** Top 10 economies of the world by LPI in 2012-2018

Source: World Bank. (n./d.)

So, we can see that Germany in 2012-2018 took first place, exceptional was 2012, just then the country took 4th place. If we consider Sweden, in 2012 it took 13th place (but in 2016-2018 it significantly changed its position and in 2018 took 2nd place). In 2012, Belgium took 7th place, and in 2018 this country improved its position by four points and thus took 3rd place.

In addition, let's consider the following countries: Austria, Japan, Germany, Sweden - they have significantly improved their positions in 2018 compared to 2012. The Netherlands, in 2012 took 5-th place, in 2014 - 2nd place, in 2016 - 4-th place, in 2018 - 6-th place. Singapore's economy took the lead in 2012, and in 2018 took 7-th place. Denmark ranked 17-th in 2014-2016, strengthened its position in 2018, which in turn led to an improvement in positions by 11 points and rose to 8-th place. The UK achieved the highest rate in 2014 (4th place) and the worst in 2012 (10th place).

Finland's economy had the best result in 2012 and it was marked by the fact that the country took 3-rd place and in 2014 lost 21 positions and took 24-th place. It is worth noting that the countries that lead the LPI ranking in 2018, makes it possible to consider them the main global transport and logistics centers. They have the opportunity to benefit from significant economies of scale, as well as through the creation and implementation of innovative technologies not only in the transport sector.

Many researchers believe that it is necessary to create a single network that would be aimed at data transmission, as well as a set of computer equipment and software for information processing, which in turn comes in the creation and operation of TLC. We believe that it is worth agreeing with the researchers about their position on the importance of creating transport and logistics centers. With their help it is possible to achieve high economic activity of the country and improve the socio-economic situation of the country.

### Discussion

The analysis of the experience of foreign countries revealed a commonality: a significant number of transport and logistics centers are organized in production, transport and consumer hubs together with transport and logistics centers. Due to the studied foreign experience it should be noted that the creation of transport and logistics centers is a significant advantage for the economy of the country in which they are located.

World experience can be applied in Ukraine as well, as the leading countries of the world have already passed the way from the creation to the effective functioning of transport and logistics centers. If the government of Ukraine is responsibly aimed at increasing Ukrainian competitiveness, then the formation and development of TLC should be one of the key factors in creating favorable conditions for improving the living standards of the population.

We agree with researchers concerning the importance and feasibility of establishing a transport and logistics center in the country, especially with the researcher (Mikhailov, 2014) that logistics centers contribute to the development of a new direction of transport: intermodal transport. Through close cooperation between transports companies that are part of the logistics center provide an opportunity to plan a scheme of international transportation thereby optimizing the usage of certain types of transport resources and vehicles.

### Conclusion

First of all, from the conducted research it should be noted that for the effective functioning of transport and logistics centers, it is necessary to meet the following criteria:

- openness / accessibility - LCs are open to all public and private companies that participate in the inherent activities of LCs and wish to be located on their territory;
- availability of cargo handling equipment available to all, purchased and used in accordance with the principles of business participation or as common property in the shopping center. Terminal complexes with customs warehouses and temporary storage warehouses, customs post, container yards, large warehouses, equipped with devices for loading, unloading and assembly of goods; a platform for waiting for unloading and loading of cars; fleet of forklifts and electric forklifts for containers and pallets used for vessels not adapted to the horizontal loading method; administrative building with auxiliary premises; communication service; security service, etc .;
- management organization
- the presence of a governing body as on of e independent legal entity acting on behalf of the LC and protecting the common interests of companies located in the LC;
- creating and developing on the basis of public-private partnership on the initiative of officials representing public administration bodies;



- the presence of a large number of competing transport, logistics and forwarding companies;
- carrying out activities that are necessarily related to transportation and logistics operations;
- tendency of LC to national and international cooperation and thus to optimization of freight flows and redistribution of goods;
- the average size of the area occupied by the LC should be 100-150 hectares. Depending on the nature of the activity, the area of the LC can be 5-500 hectares.

We have to admit that the effective development of transport and logistics centers will lead to further positive changes in the economy of the country where the next points are located. The main advantages include:

- growth of investment interest from investors;
- significant reduction in the share of total expenditures in GDP;
- by reducing logistics costs it is possible to reduce inflation;
- creation of a logistics mechanism in the country, which will lead to: optimization of stocks in warehouses; integrated logistics; reduction of consumer prices for certain types of goods at the same time improving product quality, as well as improving the living standards of the population; reduction of non-production intermediaries by reducing the cost of goods that are offered from the center of production to the consumer.

It is for the efficient functioning and stable development of transport and logistics centers that the above criteria will significantly improve the functional features of the latter. In addition, the analysis allowed to be significantly convinced of the importance and feasibility of creating a TLC, as the latter can significantly increase economic activity, improve living standards, create all necessary conditions for stable economic development, as well as constantly strengthen the country's position in the international arena.

It is worth noting that the current development of other countries of the world necessitates the search for new types and ways to strengthen the country's economy, regardless of whether the country has a weak economy or a stable one. As we could see, mainly with the help of transport technologies and their improvement the stable level of economic activity of the country is maintained, because it is through freight transportation, improving the quality of services provided, timely delivery of goods, quality services that the so-called synergetic effect is achieved. All these factors indicate a

significant increase in the role of transport and transport logistics all over the world.

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