



**LOGISTICAL COMPONENT OF SUSTAINABLE DEVELOPMENT  
OF REGIONS IN THE CONTEXT OF DECENTRALIZATION  
PROCESSES: UKRAINIAN CASE**

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**ABSTRACT**

The aim of the study is to reveal the logistical component of sustainable development of regions in the context of decentralization reform in Ukraine. The role of logistics in ensuring the balanced development of regions and united territorial communities to gain their competitive advantages is shown. The dynamics of the Logistics Efficiency Index (LEI) of Ukraine in comparison with some other countries and the dynamics of the components of LPI in Ukraine for the period 2007-2018 are analysed. A number of problems that cause a low level of logistics in Ukraine have been identified and ways to improve the logistics activities of the regions have been proposed.



A system for managing the logistics activities of the united territorial communities has been developed, which is the starting point for the organization of the social development management system. The system is a multi-component structure that combines objects, tasks, management methods and techniques, evaluation indicators and indicators. It should cover enterprises of production and non-production spheres, infrastructure facilities, organizations and institutions, interconnected in the decision-making process on the directions and ways of using elements of resource flow in the region and aimed at through optimization of flow processes based on estimating and minimizing logistics costs.

**Keywords:** Decentralization; United territorial communities; Region; Sustainable development; Logistics.

## 1. INTRODUCTION

The imperfection of the processes of structural reformation of Ukraine's economy is manifested at the regional level, leading to a certain depletion of the natural resource potential of individual territories and disparities in the social and economic development of regions. The urgency of reforming the territorial organization in Ukraine is long overdue, because the current administrative and territorial system in the country did not allow for effective regional policy, and, as a result, hindered the development of both territories and the state as a whole. In addition, Ukraine's integration into the European Community raised the question of compliance of the administrative and territorial structure of the state with European principles of regional and local development management, the need to build local self-government and decentralization reform.

Decentralization should be seen as a powerful tool of public policy for the balanced development of territorial communities. From an economic point of view, increasing the powers of communities and providing them with additional resources is the only real opportunity to revive the social and economic development of territories.

But at the same time, the strategic development of united territorial communities includes a myriad of tasks that need to be addressed as soon as possible. One of them is the organization of efficient logistics activities in the region, as a way to strengthen the regional economy, increase security and development.



## **2. LITERATURE REVIEW**

### **2.1. Decentralization literature review**

World experience includes a number of studies of theoretical provisions of the impact of decentralization processes on the efficiency of public services in the country (the traditional theory of fiscal federalism and intergovernmental fiscal relations) by (TIEBOUT, 1956; MUSGRAVE, 1959; OATES, 1972; OLSON, 1969).

American economist TIEBOUT (1956), in the 60s of last century, concluded that only under the conditions of fiscal independence of local governments, public spending will meet the individual preferences of consumers according to their needs, is the implementation of spending will be most efficient. As it is natural that central authorities alone cannot fully ensure the full provision of public goods throughout the territory, it is necessary to ensure the functioning of local self-government, which is entrusted with the list of powers necessary to ensure socio-economic development in a given area, and as a result – in the country as a whole.

OATES's (1972) theorem predicts a greater efficiency of decentralized service delivery in terms of allocative efficiency, which is using available resources to better match taxpayers' preferences and needs. Viewing government as a benevolent agent, decentralization theorem by Oates states that in the presence of diverse preferences and needs, the provision of public services by a decentralized government structure is superior to the centralized provision and generally will lead to increased citizen welfare.

Although this first-generation literature has been characterized as normative, it may also be described as making the economic case for fiscal federalism and it has inspired numerous decentralization reform projects around the world.

There have been empirical studies of the impact of decentralization processes on the economic dynamics of development, which were covered in the works BALDERSHEIM (2011), BODMAN (2009), BRUECKNER (2004), BRUECKNER (2006), generalization of the experience of individual countries in spheres of decentralization are presented in the works BALDERSHEIM (2011), KOVACS (2009), KULESZA (2002), OTOLA (2008).

The relationship between budget decentralization and economic growth on the example of China was presented FELTENSTEINA and IWATAB (2005), SUN et al. (2017). One of the key factors in China's development was the rapid introduction of fiscal decentralization, which created the conditions for economic decentralization, which had a positive impact on economic growth. JIA et al. (2020) provide support to the argument in the decentralization literature that



improving local tax autonomy is a more effective way than increasing fiscal transfers to finance local governments while strengthening local fiscal discipline.

Decentralization also, according to ARIKAN (2004) can reduce corruption, which in turn can ensure dynamic economic growth. But SLIJEPČEVIĆ et al. (2018) note that although the power of local self-government differs significantly in European countries, they all share the presence of corruption risk at the local and regional levels, which directly affects the lives of citizens and has numerous economic consequences.

An important extension of this literature is what has become known as “second-generation theory” of fiscal federalism, that brings a “public choice” perspective by assuming the presence of selfish public officials with their own agenda, as opposed to the benevolent public officials assumed in the first-generation theory. As an example, the market-preserving federalism focuses on incentives for government officials not to deviate from ‘good behaviour’ and emphasizes the role of decentralization as a mechanism to control an expansionary public sector and to support private market activity (WEINGAST, 1995; MCLURE, 1995).

More generally, the second generation literature depicts a world where political and fiscal institutions work under imperfect information and political agents have their own objective functions which are distinct from that of the “society” as a whole (OATES, 2005). The benefits and costs of decentralization are no longer limited to efficiency gains and losses in public good provision; the second-generation literature identifies other goals for decentralization, as well as trade-offs involving the design of institutions, political incentives and rent seeking, and the generation of information (WEINGAST, 2009).

The decentralization of political and economic power has become a defining feature of contemporary representative democracies. The dispersion of political authority from national governments to supranational, regional and local ones has expanded rapidly worldwide in the last decades, in what HOOGHE et al. (2010) have characterized as the “era of regionalization”.

Over the last several decades many countries around the globe have devolved fiscal and political powers to sub-national governments. According to data gathered by Garman et al. (2001), more than 80% of the seventy-five developing countries analysed had been undergoing some decentralization of authority by the beginning of the millennium. The picture is quite the same in developed countries. The index of regional authority computed by HOOGHE et al. (2010) for 42 democracies and semi-democracies reveals that 70% of countries have decentralized since 1950.



ARENDS (2020) emphasizes the dangers of decentralization and notes that the success of fiscal decentralization depends on a multitude of factors, which need to be closely monitored.

Consideration of these researches is important for reformation processes in Ukraine.

Other country's experience suggests that increased economic growth and the increase in the region's competitiveness and welfare of its population relies on how much the government is paying attention to a balanced development of the country. Regional's development is mostly viewed through lens of such economic aspects as economic growth, welfare and employment (level) (ARMSTRONG; TAYLOR, 2000); the number of number of workplaces, population's income and labour productivity (STORPER, 1997), as well as the overall economic welfare of the region (BEER et al., 2003).

Tulai et al. (2019) show the close correlation between budgetary decentralization and industrial capabilities of the regions. Recommendations for improving the financial support of the regions through the introduction of new instruments of community influence on local governments on economic growth of the territories were proposed by the authors.

Accounting the following aspects like social inequality, ecological situation, effectiveness of bodies of local municipality, cultural diversity (HAUGHTON et al., 2004) has led to more profound understanding (of decentralization and its effects) not only in economical but in social and ecological spheres.

## **2.2. Logistics literature review**

The modern logistics as an interdisciplinary science (DELFMANN et al., 2010; KLAUS, 2009; KOVÁCS; SPENS, 2005; MALINDŽÁK, 2014; MØLLER, 1995) comes from many scientific traditions and shaped by the influence of the economic and behavioural approaches (ARLBJØRN; HALLDORSSON, 2002). The logistics concept originates mainly from the marketing, management, engineering (KOVÁCS; SPENS, 2005), business administration, economics, computer and social sciences (DELFMANN et al., 2010), microeconomics and organization theory disciplines (MØLLER, 1995).

In a broad sense, the logistics appears as a “flow management philosophy” (MALINDŽÁK, 2014), the science about complex flows in networks, focused on the design, dynamics and management of these structures, that contributes to the growth and retention of “The Wealth of Nations” (DELFMANN et al., 2010). More specifically, logistics is a branch of science related to managing, guaranteeing, and implementation of flows in chains and networks for the purpose of their global optimization (MALINDŽÁK, 2014).



The methodology of logistics is aimed to model economic systems as networks, analyse their relationships thus to form the information basis for their optimal design (MØLLER, 1995) and development in order to ensure progress in the balanced achievement of economic, environmental and social goals (DELFMANN et al., 2010).

The flow thinking is the central element and a distinctive feature that defines the essence of the logistics as a discipline (DELFMANN et al., 2010; MALINDŽÁK, 2014; ARLBJØRN; HALLDORSSON, 2002). This means that economic processes are considered as the flows of objects (DELFMANN et al., 2010) that are studied from the technical, organizational and social points of view.

The logistics is based on a systemic approach (DELFMANN et al., 2010; KARATAS-CETIN; DENKTAS-SAKAR, 2013; KLAUS, 2009; MALINDŽÁK, 2014; NILSSON; GAMMELGAARD, 2012; NOVACK et al., 1992; ARLBJØRN; HALLDORSSON, 2002) and its scientific toolkit provides the space and time coordination of processes (DELFMANN et al., 2010; MALINDŽÁK, 2014) being focused on the inter-organizational interactions (MØLLER, 1995) as well as on the issues of flows mobilization and control while studying the optimal configuration and organization of economic networks models (DELFMANN et al., 2010).

One should emphasize that the economic approach as one of the mainstays of the logistic concept focuses on full costs minimization (or profit maximization) (KARATAS-CETIN; DENKTAS-SAKAR, 2013; ARLBJØRN; HALLDORSSON, 2002) as a criterion for such optimization modelling. The logistic flows are understood as a controlled movement of objects between cooperative elements (machines, activities, people, workplaces, etc.) linking them in chains and networks (MALINDŽÁK, 2014).

The flow composition depends upon the objects (materials and substances) forming it as well as the context. The elements, as a rule, include the material objects such as raw materials, work in progress, finished products, goods as well as information and services flows (KLAUS, 2009; ARLBJØRN; HALLDORSSON, 2002). At the same time, the composition of the flow elements can vary depending on the context in which they are investigated (i.e. level of analysis and purpose) (ARLBJØRN; HALLDORSSON, 2002).

This allows to cover the waste streams, gas-energy emissions and wastewater, services (including ecosystem), in particular, in view of the environmental objectives of logistics system analysis (MISHENIN et al., 2015; LINTON et al., 2007; SARKIS, 2012), as well as people, services, finance, information and knowledge (DELFMANN et al., 2010; KLAUS, 2009;





MALINDŽÁK, 2014; SARKIS, 2012) in the studying of the logistics systems in socially important sectors: healthcare, education, etc. (DELFMANN et al., 2010; KLAUS, 2009; KUBATKO; KUBATKO, 2016).

At the same time, the material flow is the main object in logistics considered as a system-forming, integrating a variety of activities factor, that broadly speaking, covers the full product lifecycle: from developing an idea to the final disposal of waste of consumption. The material flow simultaneously reflects the horizontal - the functional dimension of the logistics system, i.e. supply, production, distribution and service, etc. (MØLLER, 1995).

Thus, thanks to logistics, economic processes can be considered as flows of objects that can be considered from a technical, organizational and social point of view. Understanding the nature, features and components of material flows will optimize the flow of efficient use of resources to achieve balanced processes of creation and consumption of resources in the socio-economic system to ensure stable community growth.

**The aim of the study** is to reveal the logistical component of sustainable development of regions in the context of decentralization reform in Ukraine.

### 3. DATA AND METHODOLOGY

As a main method of research, we use the critical analysis and comparison of analytical reports, the report of the World Bank for the Logistics Performance Index for the following years 2007-2018 and The Global Competitiveness Report 2019, region development strategies and scientific publications on the issues of sustainable social and economic development of regions in the context of decentralization and also conception of logistic.

For the purpose of achieving the set goals, the following general scientific and specialized methods are used:

- theoretical generalization, comparison and systematization - to study the essence and features of logistics activity in united territorial communities;
- system analysis – for determining the state and level of development of the logistics system of Ukraine and the consequences of decentralization processes in Ukraine;
- abstract and logical – for theoretical summarization and conclusion;



- graphical method – for visualization dynamics of the Logistics Performance Index (LPI) of Ukraine and others country and for visualization the system of logistic management of the territorial community as an integral multicomponent structure.

#### **4. RESULTS AND DISCUSSIONS**

The process of European integration of Ukraine necessitates the reform of various sectors and relies on existing economic, social and political factors. The current situation in the economic and social development of Ukraine shows that without decentralization of functions in economic development it is impossible to ensure coordination and establishment of relations of administrative and territorial interests with national ones.

Reforming the administrative and territorial system in Ukraine began in 2014. The new administrative and territorial system should be the basis for building a new model of territorial governance based on decentralization, subsidiarity, balance of national interests with the interests of the population of regions and territorial communities, local government, ubiquitous local government capacity and independence of territorial communities to address issues of local importance (PAVLYUK et al., 2016).

The process of decentralization began in Ukraine with the adoption of the “Concept of reform of local self-government and territorial organization of power” (2014), Laws “On cooperation of territorial communities” (2014), “On voluntary association of territorial communities” (2015) and changes to the Budget and Tax codes on financial decentralization. This process has allowed forming a significant effective and capable institution of local self-government at the basic level – united territorial communities, according to the provisions of the European Charter of local self - government.

In 2014 at the time of the concept approval of local self-government reformation and territorial power organization in Ukraine “Concepts of reforming local self-government and territorial organization of power in Ukraine” № 333-p (2014) (LAW OF UKRAINE N333-p, 2014) the existing problems of local governance have accumulated enough. In Ukraine, until 2014, about 12 thousand territorial communities have been formed, in more than 6 thousand communities the number of residents was less than 3 thousand people, among them in 4809 communities – less than 1 thousand people, and in 1129 communities – less than 500 people. The most of the local budgets were subsidized: 5419 budgets of local governments were subsidized; it is over 70%, 483 territorial communities were contained for 90 % at the expense of the state budget (CONCEPTS OF REFORMING LOCAL SELF-GOVERNMENT AND TERRITORIAL ORGANIZATION OF POWER IN UKRAINE, 2014).





As a result of the reform, new administrative and territorial units are created - united territorial communities (UTG). The process of municipal consolidation has begun - the formation of affluent communities as a result of voluntary unification of adjacent territorial communities, villages, settlements, cities. According to the Methodology of Formation of Able Territorial Communities (LAW OF UKRAINE N214, 2015), able-bodied territorial communities are territorial communities of villages (settlements, cities), which as a result of voluntary association are able to provide an appropriate level of service provision independently or through relevant local governments, in particular in the field of education, culture, health care, social protection, housing and communal services, taking into account human resources, financial support and infrastructure development of the relevant administrative and territorial unit. That is to ensure sustainable strategic development of your region.

The formation of UTCs (united of territory communities) in Ukraine is rapid compared to similar reforms in other European countries. In 2015, the first 159 UTCs are created, the following year their number increased to 366, by the end of 2017 - to 665, by the end of 2018 - to 874, in 2019 there are already 1029 UTCs with a population of 11.7 million people, in which united 4698 communities. At the same time, the population living on the territory of the united territorial communities is 11.7 million people, which is 33.3% of the total population in Ukraine.

Own revenues of local budgets has increased from 68,6 billion UAH in 2014 to 267,0 billion UAH in 2019.

The main idea of decentralization is to transfer to local governments the competence to address issues related to local needs, increase the efficiency of local governments by giving them the appropriate authority to effectively manage financial resources and identify priority expenditures that need funding.

European and world experience shows that local problems can be effectively solved only at the local level. All post-socialist countries in Central and Eastern Europe have undergone the path of decentralization, which in turn has given them a huge impetus for their development. Local interests can be much better assessed on the ground than by the central government, which satisfies the latter at a higher price than when provided by the local government (GUZIEJEWSKA, 2018; OPIŁOWSKA, 2019).

The main purpose of the changes that are now taking place in most Ukrainian communities is to create conditions for effective development. This also will provide high-



quality and affordable services, comfortable conditions for people to live in each community – regardless of whether it is a big city or a small village. Communities are not only united to gain more power and resources, they are consolidating their efforts to become stronger, to have resources and to be able to independently solve most of the issues that concern their residents. At the same time, the communities should also increase their level of responsibility to the business: the investor should not doubt that his funds can be used for other purposes (POCHTOVYUK et al., 2019; GLONTI et al., 2020).

In today's conditions of rapid development of the world economy, population growth and uncontrolled exploitation of natural resources, there is an understanding of the importance of balanced regional development. Thus, the EUROPE 2020 strategy, among the main priorities, emphasizes balanced development in the form of supporting a more efficient, cleaner and more competitive economy.

And it is decentralization that is a powerful tool for ensuring the balanced development of territorial communities. According to KASYCH (2016), compliance with a number of conditions triggers a mechanism to influence decentralization on the country's economic development by redistributing state budget revenues in favour of regions, developing local infrastructure, ensuring the efficiency of public goods production, increasing investment attractiveness and business development in the region.

Decentralization should be seen as a powerful tool of public policy to ensure the balanced development of local communities. Strengthening the independence of local authorities should motivate the effective and rational use of existing capacity or management decisions to find alternatives and additional opportunities to increase the competitiveness of communities to achieve the appropriate level of service to local residents, improve social living conditions, create a full living environment, stimulate and intensify economic activity, ensure sustainable development of the region.

It should be borne in mind that the greatest effect will be obtained in the long run. BODMAN et al. (2009) note that fiscal decentralization has little effect on economic growth in the short run. In analysing growth in the medium term, the results have been mixed, as fiscal decentralization may tend to increase income inequality and slow economic growth. However, in the long run, decentralization results in accelerated economic growth.

Today, the definition of the region as an economic unit has changed. Experts from the Organization for Economic Cooperation and Development focus on defining a functional



region that is not only a geographical area with certain administrative boundaries. But also they focus on a labour market with daily flows of workers and an area with strong social and economic, cultural and environmental ties. (OECD, 2013).

Currently, there are multidimensional changes in the functioning of the regions, namely: increasing the social responsibility of residents and businesses; globalization of interregional competition; strengthening migration processes; growth of capital mobility; development of specialized credit institutions (KOZACHENKO et al., 2020); digitalization of all spheres of life in the region. There are also paradigm shifts in the management of the region, the main determinants of which are: goal orientation based on task ideas, participatory leadership, multicultural human resources, flexible structures, heterogeneous and network organization, comprehensive vision (HOVRAK, 2019).

In turn, the development of logistics plays an important role in ensuring the balanced development of regions and territorial communities. Given the possibilities of using the available potential, the logistics approach is important in choosing the economic guidelines for the development of regions and UTCs. The implementation of logistics activities contributes to the strengthening of the region's economy, ensures its balanced development and the fullest satisfaction of consumer needs. Logistics activities in the region are able to solve such strategic tasks as creating conditions for gaining competitive advantages and forming the appropriate level of logistics potential.

TKACHOVA and ZAHORNA (2012) define logistics activity as “the direction of economic activity, which is the management of material and related information, financial and service flows of the enterprise, carried out by consistent and mutually agreed implementation of logistics operations (logistics, warehousing of resources and products, organization of production process, management stocks, customer service, transportation, distribution and marketing) based on the principles of system, complexity, integration of all parts of the logistics chain “supply - production – sales” in order to achieve long-term business success by maximizing customer satisfaction and minimizing costs in conditions of risks, variability and uncertainty of the external environment”.

The development of the logistics market of any country, including Ukraine, depends on the state of its economy. Its operators ensure the interaction of participants in economic relations, link production chains allow goods to find their customers. The volume of services



provided in the field of logistics directly depends on the level of activity of their customers, the dynamics of production, domestic and foreign trade.

In modern conditions, logistics plays a key, often decisive role in the development of countries. The main goal of logistics development in the national economy is to increase the transit potential and reduce logistics costs in the final cost of production. Countries that understand this pay considerable attention to the development of logistics and the improvement of its infrastructure.

A method is used to effectively assess the development of logistics that allows to assess the current state of the logistics industry in the world. To measure the efficiency of logistics countries, the World Bank and the Turku Institute of Economics in Finland in 2007 proposed a national logistics performance index (LPI), which became the first comprehensive indicator to assess the level of logistics development in different countries (CONNECTING TO COMPETE 2007: TRADE LOGISTICS IN THE GLOBAL ECONOMY, 2007).

We use the Logistics Performance Index (LPI) developed by World Bank (in order to objectively assess logistic system in Ukraine and compare it to logistic systems of other countries (Fig.1). The Logistics Performance Index is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance.

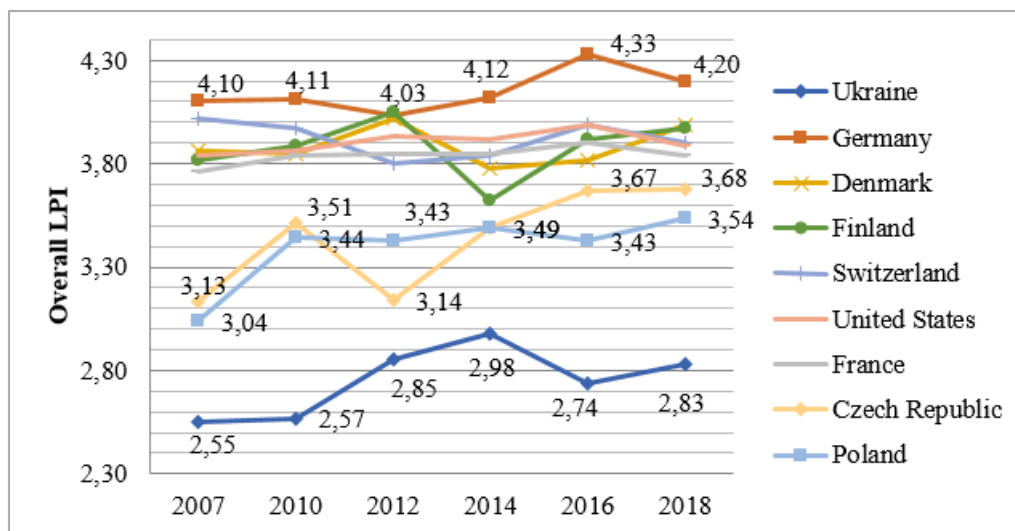


Figure 1: Dynamics the Logistics Performance Index (LPI) of some of the worlds in 2007-2018

Source: According to the data: The World Bank International LPI Data, available at: <https://lpi.worldbank.org> (2020).

The LPI is determined on the basis of a standardized questionnaire, for an online survey on the Internet, and uses the analysis of the main components to compile data into a single index. The study is based on the results of surveys of mainly international (transnational) logistics companies, while not taking into account the views of service consumers and the characteristics of individual countries, such as access to the sea, the area of the country, etc. In addition, in many countries, official statistics on the market for logistics services at the national level are very limited, mainly based on expert opinions. LPI values range from 1 to 5, with 1 indicating lower logistics performance and 5 indicating higher logistics performance.

Construction of LPI following indicators were used, the efficiency of customs and border clearance, the quality of trade and transport infrastructure, the ease of arranging competitively priced shipment, the competence and quality of logistics services, the ability to track and trace consignment, the frequency with which shipments reach consignees within scheduled or expected delivery time.

The country's ability to trade with other countries depends on access to the global logistics network and freight. The efficiency of supply chains (cost, time and reliability) depends on the individual characteristics of the country's economy and the construction of the logistics system. The LPI assumes that customs reforms, better border management and infrastructure improvements have a significant impact on logistics. The World Bank sees LPI as a sensory indicator of trade growth.

Although LPI is the most complete source of data for logistics and trade facilitation in the country, it has two important limitations. First, the experience of international freight forwarders may not reflect the broader logistics environment in poor countries, which often rely on traditional operators. International and traditional operators may differ in their interaction with government agencies and in the level of service. Second, for landlocked and small island states, the LPI may reflect out-of-country access problems that have been assessed, such as transit difficulties. The low rating of a landlocked country may not adequately reflect its trade facilitation efforts, which depend on the operation of complex international transit systems. Landlocked countries cannot eliminate transit inefficiencies through domestic reforms.

160 countries of the world took part in the evaluation of the logistics efficiency index in 2018. The constant leader of the rating (position №1 in 2010, 2014, 2016 and 2018) is Germany (Figure 1). It should be noted that the top ten leaders do not change significantly.



Austria, Japan, the Netherlands, Singapore and the United Kingdom have the most developed logistics systems.

The countries that topped the LPI rankings are the main European transport logistics centres. They benefit from the creation and implementation of innovative technologies, as well as economies of scale. The country with the lowest rating is usually geographically isolated or suffers from poor governance. There is also a difference between countries with the same level of income. A country where trade is a significant growth factor has higher logistics productivity than a country with a similar level of income. An oil-exporting country often has a low LPI, while a country with an export and oriented industry has a stronger logistics sector.

According to LPI Ukraine is placed 66<sup>th</sup> out of 160 countries that got in World Bank's rating. The world's leading economies are found atop suggesting that there's a high correlation between country's logistic performance and economic success. Ukraine was placed 73<sup>rd</sup> in 2007, 102<sup>th</sup> in 2010, 66<sup>th</sup> in 2012, 61<sup>th</sup> in 2014, 80<sup>th</sup> in 2016 and 66<sup>th</sup> in 2018.

The decrease of LPI after 2014 can be attributed to worsening of political and economic situation in the country. Macroeconomic situation in Ukraine was unstable throughout the last from 2010 till 2018; in fact, Ukraine has turned to the level of efficiency of logistics in 2012.

Dynamics the Logistics Performance Index in Ukraine during 2007-2018 are presented in Table 1.

Table 1: Dynamics the Logistics Performance Index in Ukraine (2007-2018)

Year	LPI rank	LPI score	Customs	Infrastructure	International shipments	Logistics quality and competence	Tracking and tracing	Timeliness
2007	73	2.55	2.22	2.35	2.53	2.41	2.53	3.31
2010	102	2.57	2.02	2.44	2.79	2.59	2.49	3.06
2012	66	2.85	2.41	2.69	2.72	2.85	3.15	3.31
2014	61	2.98	2.69	2.65	2.95	2.84	3.20	3.51
2016	80	2.74	2.30	2.49	2.59	2.55	2.96	3.51
2018	66	2.83	2.49	2.22	2.83	2.84	3.11	3.42

Source: Official site of the World Bank Group (2020), available at: <http://www.worldbank.org/>

Analysing the integrated LPI index by components, we note that the situation is not always clear, so in 2018 Ukraine took 66<sup>th</sup> place under the Customs sub-index, 52<sup>nd</sup> for the Timeliness, but 119 for the International shipments sub-index (Table 1). In 2018, there was an improvement in all parameters, except for the parameters: "Infrastructure", "Timeliness" (Fig.2).



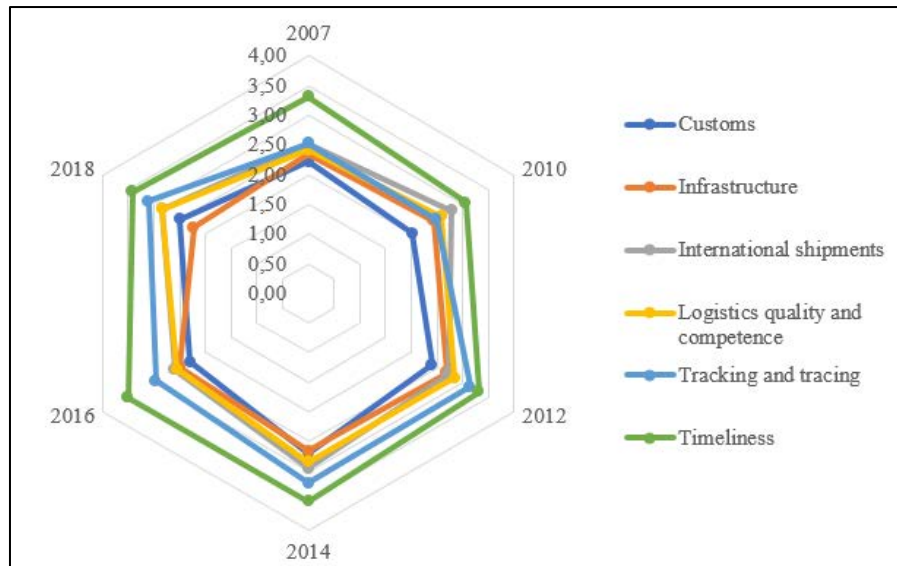


Figure 2: Logistics Performance Index of Ukraine in terms of individual indicators in 2007-2018

Source: According to the data: The World Bank International LPI Data, available at: <https://lpi.worldbank.org> (2020).

This is due to the insufficient level of technical and technological support, low quality of the road surface, insufficient level of efficiency of the warehouse organization.

World Bank analysts, when comparing differences in logistics between different countries, regions and income groups, and discussing different logistics strategies for different groups in the world, note that low-income countries focus mainly on logistics infrastructure and transport simplification, while middle-income countries intend to improve logistics competencies and services, as well as trade rules. On the other hand, high-income countries pay more attention to green logistics and information systems. This means that richer regions have more opportunities to promote the sustainable development of green logistics.

Thus, Ukraine is significantly inferior in the development of logistics to the countries presented in Figure 1. Confirmation of this can be seen in The Global Competitiveness Report 2019 (2019), presented at the World Economic Forum. According to the general indicator of transport infrastructure development, Ukraine ranks 59<sup>th</sup> among 141 countries, according to the Road connectivity indicator 59<sup>th</sup> place out of 141, according to the Quality of road infrastructure indicator - 114<sup>th</sup> place out of 141, according to the Railroad density indicator - 25<sup>th</sup> place out of 141, according to the indicator “Efficiency of train services” - 34<sup>th</sup> place out of 141, according to the indicator “Airport connectivity” - 53<sup>rd</sup> place out of 141, according to the indicator “Efficiency of air transport services” - 101 place out of 141, according to the indicator “Liner shipping connectivity” - 57<sup>th</sup> place out of 141, according to the indicator “Efficiency of seaport services” - 78<sup>th</sup> place among 141 countries.

This, in turn, is due to a number of problems, including:

- insufficiency of transport and logistics and hub logistics centers: lack of coordination in the management of material flows and in the distribution of stocks, lack of additional services;
- lack of proper transport infrastructure: low quality of roads, insufficient number of them, significant physical and moral wear and tear of transport, which complicates the reduction of delivery time from producer to consumer;
- inefficient use of fixed assets: increased costs for transportation and storage due to downtime, under loading of equipment and irrational use of working space;
- weak level of development of enterprises producing packaging and containers;
- lack of relationships between enterprises and logistics companies: difficulties with tracking logistics chains and the process of transportation of goods;
- unsatisfactory level of communication system: difficulties in the process of tracking goods on the road;
- shortage of highly qualified specialists;
- weak level of effective mechanism of partnership relations between firms and enterprises.

Thus, our country, despite the significant potential for the development of the logistics industry, continues to lag behind and shows deterioration in the LPI index. Experts recommend implementing a set of measures both in the field of improving the logistics infrastructure and finding new approaches to management to improve the situation in Ukraine, and in the field of automation of logistics processes (HRYNCHAK, 2020).

TYURINA et al. (2015) summarizing the views of leading experts, identified the following trends in the international market of logistics services:

- strengthening the position of enterprises with developed logistics networks;
- intensification of logistics outsourcing development;
- growth of regionalization of logistics networks;
- reduction of the logistics chain and optimization of logistics costs;
- reduction of product life cycle and the emergence of approaches to distribution;



- growing role of innovation in logistics business processes;
- increase in transport costs due to rising fuel prices, tariffs, increasing the frequency of transportation.

The potential of logistics at the regional level will help to properly form strategic guidelines for development, namely, to identify opportunities for logistics activities.

The logistics activities of the region should be understood as the activities of economic entities related to the planning, organization, management and control of the entire set of material flows and relevant information in the process of their physical movement within the logistics field of the region through consistent and consistent in time and space performing appropriate logistical actions (KASYCH; ONYSHCHENKO, 2019).

This, in turn, will create conditions for gaining competitive advantages and forming the appropriate level of logistics potential, strengthening the region's economy, ensuring its balanced development and meeting the needs of consumers as fully as possible.

Today, the concept of logistics is a scientific basis for innovative change in management practices in such key areas of integrated territorial communities as nature management in production systems, management of secondary resources and waste, formation and development of life support systems in the community.

Therefore, the flow of various resources owned by the united territorial community (land, people, capital, entrepreneurial skills, information) within the regional social and ecological and economic systems are the object of logistics research, because the community is a kind of basis, which is human environment, the basis of management, a means of consolidating all spheres of social production, as well as a carrier of natural resource, economic, social and consumer potential through natural, social, demographic, social and economic characteristics.

The effectiveness of the development of a united territorial community is manifested in three spheres of human life: economic, social and environmental. The interdependence and combination of these three types of development also forms a sustainable balanced development of the territorial community. The implementation of measures to improve technological processes, reduce resource consumption of production, environmental management should be carried out on an innovative basis, which is based on a qualitatively new understanding of the content of resource use processes, the content of resource-efficient



economy.

Despite a certain lag of Ukraine from the leading countries of the world, it is necessary to take into account modern realities. The development of technologies of the fourth industrial revolution has greatly influenced innovative solutions in the field of logistics systems. Technologies that change the technical and economic structure of many economies of the world and affect the format of logistics systems include the following: implantable technologies; Big Data technologies; unmanned vehicles; Artificial Intelligence; robotics and services; Blocks chain technologies; 3D printing technology (DHL GROUP: LOGISTICS TREND RADAR, 2019); genetic engineering; neuro-technology; smart cities and homes, widespread introduction of ERP-systems (Enterprise Resource Planning), which have actually become global standards and are information systems for planning and management of all enterprise resources (TRUNINA et al., 2018).

All these trends affect the technological changes that occur in logistics systems, which raises the question of studying the impact of these changes on the logistics sector. Against the background of these changes there is a question of compliance of Ukrainian logistics with world standards, research of prospects of further development of logistics in Ukraine and its integration into European logistics systems, revision of requirements to logistics not only national but also regional level.

The problem of ensuring sustainable social and economic development of the community is in its content and logistics, i.e. it can be presented as a problem of optimizing the flow of resource use in space and time, which aims to balance the processes of reproduction and consumption of resources in social, ecological and economic system (MISHENIN; KOBLYANSKA, 2014).

The managing influence is realized within the system of logistical management of the territorial community, which is an integral multicomponent structure. Objects are a set of flow processes that have technological, organizational, economic and information unity. The purpose of logistics management is a thorough optimization of flow processes based on the assessment and minimization of logistics costs, which is achieved by performing tasks using management methods and tools (Figure 2).



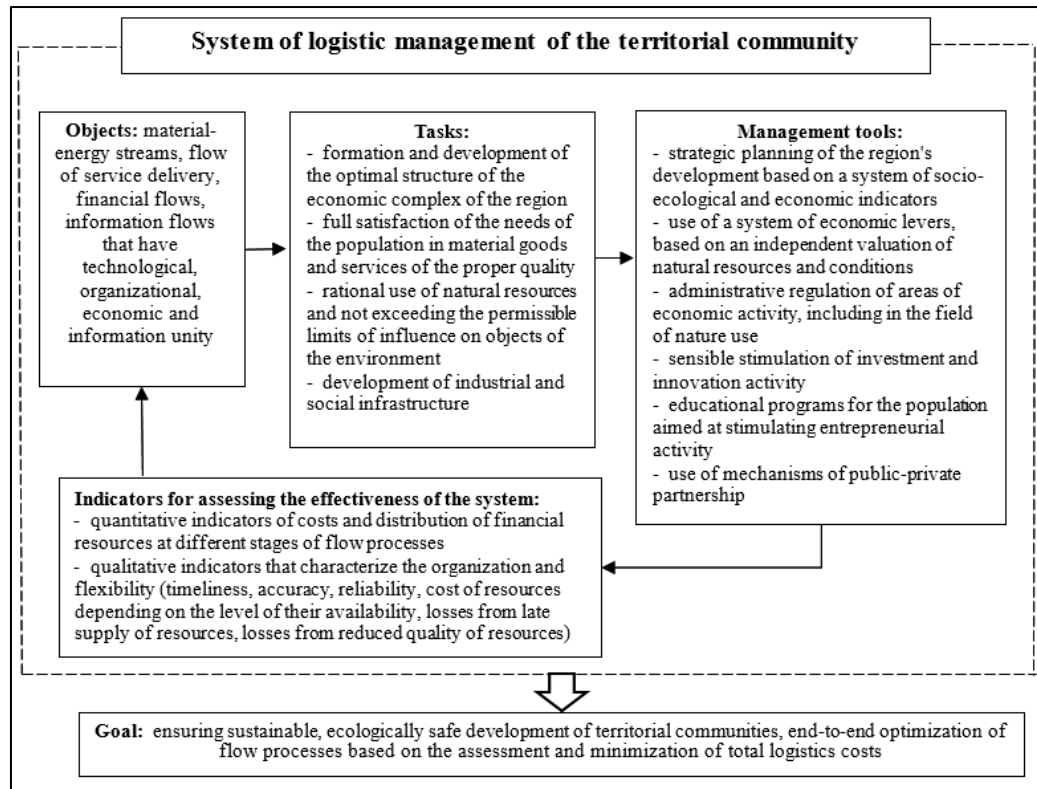


Figure 2: Components of the system of logistic management of the territorial community  
 Source: independently developed by authors

Evaluation of the efficiency of the logistics system is carried out using a number of quantitative and qualitative indicators, and should include, in addition to determining total costs, an assessment of profit losses due to irrational use of flow resources, which determines the specificity of the logistics approach.

The application of the logistics approach at the level of territorial communities allows to ensure the solution of a number of key tasks of regional management: development of the optimal strategy in the regulation of structural proportions and material flows of social production; optimization of material and related service, financial, information flows in the region based on the assessment and minimization of logistics costs.

## 5. CONCLUSIONS

The practical implementation of the application of the logistics approach necessitates the formation of a logistics system of territorial communities. Management of flow processes of resource use at the regional level is carried out at all stages of formation and operation of material and energy flow from the provision of raw materials to the disposal of production and consumption waste. Thus, the logistics system of the territorial community will include enterprises of industrial and non-industrial spheres, infrastructure facilities, organizations and institutions, interconnected in the decision-making process on the directions and methods of

using elements of the resource flow. In turn, this encourages companies to be socially responsible, to seek ways of cooperation through cooperation, consolidating their efforts for the balanced development of their communities, to use public and private partnership mechanisms to implement their development projects and the development of their region.

Depending on the social and economic conditions of a particular territorial community, there should be an improvement of methodological tools for the analysis and optimization of flow processes at different levels of management; development of structural and substantive bases and components of the system of logistics management of community development, as well as the development of practical recommendations for their implementation, respectively.

Thus, the use of logistics tools in regulating the processes of resource use at the level of territorial communities allows to form an effective management approach to solving problems of ensuring sustainable balanced development of the territorial community, and hence timely appropriate quality in the required amount, provided that the appropriate level of quality of environmental components, the disclosure and use of existing natural resource, economic, social and consumer potential of the region.

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