LOGISTICS SYSTEMS AS A FACTOR OF COUNTRY’S COMPETITIVENESS

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Abstract

In global economy the activity of logistics systems, its infrastructure usage for the purpose to achieve the growth of economy become a necessity, whereas the scope and aims of logistics systems and its infrastructure use become specific in a reason of the impact of country’s economic policy, focused on long-term competitiveness. Main factors of logistics systems impact on country’s economic growth could be embodied through development levels of logistics systems and its infrastructure, the impact of business environment, the mobility and effective use of resources, logistic flexibility and receptivity to innovations. Opportunities to allocate and distribute processes and activities within logistics systems, also the stability of relations between subjects of logistics systems, allow for sustainable development of country’s economy and relevant distribution of synergy effect of logistics systems activity. So, for the aim to generate country’s competitive advantages it is necessary to improve indicators of effectiveness of logistics systems activity.

Keywords: logistics systems, growth of economy, infrastructure, competitiveness, factors of competitiveness.

JEL Classification: A10, F12, L91, R41.

Introduction

Globalization and the intensification of competitiveness attached importance to methods and measures for retention and increase the capabilities to compete for every country. So, globalization processes in economics determine the necessity to ascertain and effectively to take competitive advantages of logistics systems on national and international levels in case to ensure the long-term stable growth of economy and with the aim to reach long-term competitiveness of the country.

By solving the problems of logistics systems the application of systems conception was based by the analysis of flows, operations, processes and functions within the framework of logistics systems in an aspect of country’s economy growth and its competitiveness.

Formation process of logistics systems in market economy is ground by complement concept, because this process includes the research of particular spheres, i.e. interests of producers, transport and other services suppliers, consumers on country’s level. It shows the complexity of logistics systems activity and the multiplicity of the impact on country’s competitiveness because of permanent need to coordinate the interests of mentioned spheres of country’s economic activity.

The object of the study is logistics systems in an aspect of country’s competitiveness.

The aim of the study is to investigate peculiarities of logistics systems in an aspect of country’s competitiveness.

The tasks of the study:

1. To distinguish functional particularities of logistics systems on national and international levels;
2. To determine main factors of logistics systems impact on the growth of country’s economy;
3. To evaluate the impact of logistics systems on country’s competitiveness.

The methods of the research are systematic, logical and comparative analysis of scientific literature, synthesis.

The novelty of the study is analysis of factors of country’s competitiveness through the country’s logistic flexibility and the effectiveness of logistics systems activity.

In this instance the subject of country’s competitiveness is logistics systems with its elements (the infrastructure, centers, etc.), whereas the object is flows (material, financial, informational, etc.), moving inside these logistics systems.

Functional particularity of logistics systems

Scientists of economics and management distinguish logistics as an integrated science with the purpose to solve management problems of optimal movements of various flows (informational, material and
financial) and resources (Gourdin, 2001; Urbonas, 2004). From the theoretical point of view, the logistics system is a structural combination, the foundation of which consists of the elements (subjects) thereof as well as interaction and interconnections among them (Harrison, 2002; Николашин et al., 2003). From the dynamical point of view, the activity of the logistics system is ensured by the whole of universal practical measures, which helps to investigate, determine and control the consistent patterns of organization and movement of economic flows in the process of production, distribution, exchange and consumption of. Economic decisions concerning achievement of the set aims are made on the basis of the results of application of the measures of such nature (Семененко, 1999). In this way, rational use of resources is ensured in this system and this emphasizes prevalence of economic principles in logistic activity.

The authors of the study distinguish the purpose of logistics systems - to service the flows, which form and move in various production and service spheres, on different coverage and development levels. In this instance, the flows are distributed inside this country and the other proceedings have place, including the added value creation. So, logistics systems ensure the suitable problems solving of transportation, storage and logistics service, the price system control and the increase of the competitiveness of goods, services and the country's economy at all. Thus, resources of a country become sources of value-added creation. Furthermore, resources of a country and its effective usage are determined by scientists as one of views on international competitiveness, based on advantages of a country's economy (Snieska, 2008). This situation grounds and shows that the aims of logistics systems activity and country's economy development are harmonized and coordinated, i.e. the necessity to change resources (tangibles) in a view of time, place, quantity and quality, which ensure the increase of contribution to GDP of logistic services and development of country's economy by using logistics principles and concepts.

It is necessary to mention, that the role of effective application of competitive advantages is growing on national and international levels, because of the compression of other sectors (communication, information technologies) by its development, the well-groomed taste of consumer by high quality and standards products and services, the impossibility to survive for the business in conditions of protectionism. In this case, the growing importance of logistics as a part of service sector occurs in economy of a country, impact factors of information, communication technologies and other innovations on logistic activity were determined.

For the analysis of logistics system's peculiarities in a view of a country's competitiveness it is purposeful to invoke principles of regional logistics and competitiveness of country's regions. The scientists accentuate that the regional logistics must be oriented on the development of regional economy through the development of logistic infrastructure and services (Held et al., 2000, Hocson, 2007). Scientists V. Snieska and J. Bruneckiene offers a view on competitiveness as a cycle process, when the result becomes a contribution, which in future causes the result (Snieska, Bruneckiene, 2009). Thus, in case of the aim of sustainable and equivalent development of regions, the successful economic development of the country will be achieved by the synergy effect of development of all country's regions, invoking the contribution of each region in an aspect of logistics systems activity. In accordance with principles of regional logistics and competitiveness of region, it is necessary to improve and harmonize the infrastructure for the sustainable development of regions, conditions creation for effective capital expenditures. Furthermore, the destabilization of infrastructure processes in these regions determines the increase of production and services costs, and the decline of citizens’ living quality in these regions. It has negative impact on the competitiveness level of regions and country in general.

Scientists consistently underline that the equivalent development of infrastructure ensure the conditions for business expansion, social welfare and quality of life. The impact of infrastructure is perceived through services, provided by physical usage of infrastructure. It improves once more, that the infrastructure is directly dependent on capital and human resources and could not be separated from it (Snieska, Simkunaite, 2009). Also, scientists accentuate that competitiveness of the country is formed on bases of competitiveness of production sectors, the development of infrastructure and country's economic and political position (Cibinskiene, 2009; Reiljan et al., 2000). Thus, the country's competitiveness might be described through the high production level, the stability of economic and political situation and effective use of infrastructure development opportunities, i.e. it is accentuated the factors of infrastructure, macro environment and innovations impact.

In modern economy the concept of individual needs, which is formed on the base of individual experiences of potential consumers, now changes the phase of mass production and services. So, the main value-added in XXI century will be created in creative industries and technology spheres by
individualization of consumption in any market segment. It shows the formation of new concept of “experience economy” and the benevolence of this situation for the development of logistics systems activity. The scientists noticed, that all consumption sector is becoming an “experience economy” (Goleman, 1995). The activity of logistics systems are very good example of the impact of this concept, as logistics systems activity is very sensitive for the change of demand factors, services of logistics systems are elastic and depend on consumers’ experience or wishes to get this experience. Moreover, the activity of logistics systems is very dependent on intensity of consumption, variety of its needs. However, the scientists note, that the sector of services, also logistics services, is less sensitive for cycle changes, i.e. for expansion and recession, and it ensure the stability of this sector (Navickas, Bagdonaite, Juscius, 2006).

The relation of logistics systems and country’s competitiveness

Scientists distinguish two groups of factors of economic growth and competitiveness: general factors (business environment) and specific factors of different sphere or sector of activity (Navickas, Malakauskaite, 2009). World Economics Forum invokes this factors determination in its reports, adding the third group of factors, i.e. innovation and sophistication factors (World Economic Forum, 2010a).

For the determination the relation of logistics systems and country’s competitiveness, it is necessary to analyze evaluation indexes and its structures. In this instance it is purposeful to study these indexes in a view of global competitiveness, global trade and the effectiveness of logistic activity.

Specialists of World Bank evaluate the logistics industry in world countries by LPI, i.e. Logistic Performance Index (Arvis et al., 2010). It analyzes the effectiveness of clearance process, the quality of trade and transport related infrastructure, the ease of arranging competitively priced shipments, also quality and competence of logistics services, ability to track and trace consignments, frequency with which shipments reach the consignee within the scheduled or expected delivery time. The evaluation of competitiveness of countries in a view of global economy is presented by GCI, i.e. Global Competitiveness Index. It analyzes basic requirements (institutions and its regulations, infrastructure, macroeconomic environment, health and primary education), efficiency enhances (higher education and training, the efficiency of goods, labor and finance markets, technical readiness and market size) and innovation and business sophistication factors. Global enabling trade is analyzing by separate index GETI, i.e. Global Enabling Trade Index, which includes the evaluation of trade tariff and non-tariff barriers, proclivity to trade, the effectiveness of customs administration and export-import proceedings, the clearance of border administration, the usage of transport infrastructure, its possibilty and quality, the use level of information and communication technologies, legal regulations and physical security. The adapted structures of these indexes are given in Table 1.

<table>
<thead>
<tr>
<th>Elements</th>
<th>LPI</th>
<th>GETI</th>
<th>GCI</th>
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<tr>
<td><strong>Basic requirements:</strong></td>
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<td></td>
</tr>
<tr>
<td>Institutions and its regulations (government, customs, barriers, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Infrastructure (its technical access, quality, security, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Macroeconomic environment (political, economical, ecological, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Health and primary education</td>
<td></td>
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<tr>
<td><strong>Efficiency enhancers:</strong></td>
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<td></td>
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<tr>
<td>Higher education and training (service quality and competence)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Goods market efficiency (resources, production, flows intensity, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Labor market efficiency (time, service quality, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Financial market development (capital flows, investments, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Technical readiness (flexibility, compatibility, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Market size (proclivity to trade, consumption intensity, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Innovation and sophistication factors:</strong></td>
<td></td>
<td></td>
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<tr>
<td>Business sophistication (variety of sectors, proclivity to trade, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Innovation (information and communication, technology, etc.)</td>
<td>+</td>
<td>+</td>
<td>+</td>
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</table>

By this way it is possible to indicate main relations between competitiveness of the country and the activity of logistics systems through the evaluation of trade possibilities and conditions, which ground opportunities for logistics systems flows movement. In this case, for the aim to determine competitive advantages of a country in an aspect of logistics systems activity it is necessary to study the infrastructure of
a country and other technical and technological capacity, macro environment together with institutional structure and regulation mechanisms in a country, the effectiveness of resources usage, which flows form separate markets, the level of innovation implementation. These factors strongly impact the general perspectives of country’s economic development and the formation of its development strategy.

The purpose of logistics systems development is the determination and the appliance of economic growth disproportion and unimproved opportunities for foundation of the development strategy of country’s economy. In this case the main aim of this strategy must be the achievement of long-term competitiveness of a country through the logistic flexibility in a view of country’s competitiveness. It is necessary to mention that these aims and processes have a positive influence on environment plight and its balance, which directly impacts logistics systems and the economy of the country in general, also the intensity of consumption.

Hereby, main factors, illustrating logistics systems and economy of a country, must be harmonized in aspects of static and dynamic changes. It is necessary to pursue the technological compatibility of the country and logistics infrastructure and sustainable its development, to create favorable business conditions for sectors, to keep the mobility of human, natural, cultural and other resources. It is impossible to separate the competitiveness of a country or sector and constant process of its development, and the harmonization of different spheres of activity might be defined and evaluated in general, not only through economic aspects, also it might be analyzed in a view of political, cultural, social, ecological and other aspects (Navickas, Malakauskaite, 2010). For these aims it should be determined and practiced the complex of political, juridical, social-cultural and economic measures, i.e. taxation and burnout of subjects, rules of infrastructure use, open economy of a country, limitation and stimulation resources flows, pollution prevention, etc.

The impact of logistics systems on economy growth and competitiveness of the country

In globalization conditions for each country it is very important to increase the level of its economy competitiveness, determined by the evaluation of various indicators: infrastructure, macro environment, activity and intensity of the market, innovations and others. (Snieska, Draksaite, 2007).

The evaluation of infrastructure usually described by physical-technological indicators: placement of network, its connectivity, quality, etc. For the aim to eliminate bottlenecks of infrastructure, to ensure its compatibility and adaptation in changing environment conditions, it is necessary to invest into logistic infrastructure as a structural element of logistics systems. The impact of investment on economic growth of a country is given in Figure 1.

![Figure 1. The impact of logistics on economic growth](image-url)
Investment into logistics infrastructure allows for the increase of the logistics capacity, its effectiveness and reliability, service quality and the multiplication of added value. It causes lower logistics costs, shorter transit times of flows movement inside logistics systems and creates conditions for business expansion.

It should be noted, that changes of ownership forms in economic system cause new opportunities for investment and capital movement in logistics systems in a view of transformation processes of country economy (Sujeta, Navickas, 2010). Therefore, during the evaluation of the environment of logistics systems activity and investment conditions it is necessary to determine the state of economic system, economic and politic situation in a country for the aim to choose the best investment alternatives in a view of time and investment size.

The aim to create favorable conditions for business expansion once more grounds the necessity to improve the logistic infrastructure in country. This infrastructure, in accordance with scientists’ opinion, must be understood as a “material-technical system to provide the production and citizens’ social life” (Носов, 2007). In this instance, the logistics system is a subject, providing the the economy of a country with needful infrastructure and organizing the movement and distribution of various flows (material, finance, informational, etc.) inside the country. It should be noted that the infrastructure consists of the network of various types of transport, informational channels and systems, means of communication and locomotion, storage facilities, external provision of energy resources, financial supply systems for logistic processes, service companies for citizens, etc.

The particularity of logistics systems activity requires the synchronization of its elements’ (subjects’) actions, which are necessary in material and other values endowment for production, service and trade processes (Johnson et al., 1999). In this view it is possible to determine constant interconnection of logistics systems elements (subjects): transportation, information, procedures, etc. So, direct participants of logistics systems, representatives of production and services sectors of economy in a country and consumers of its products could be attributed to logistics systems subjects. This interconnection forwards the effective use of transport network, the increase of intensity of flow’ and resources’ movements. In development process it is very important to distinguish the differentiation of functions and operations inside the logistics system in accordance with a purpose and distribution of flows, forms and actions harmonization of different elements of the system. Scientists consistently underline the necessity in compatibility of aims for different activity spheres, its interdependence and the importance of its particularity (Navickas, Malakauskaite, 2007). The expedience expediency of operations and flows directions is directly dependent on aims and objectives of economy development in a country and might be harmonized.

Moreover, the fact of differentiation and the constancy of elements interconnections positively impact indexes of effective use of country’ resources and other tangibles, expressed by technical, financial and other indicators. In a view of geographic, demographic and other economic factors logistics systems could change the concentration of tangibles flows, its places of deployment (static), directions and path of its movements (dynamic) on national and international levels. By this way, the development of economy is ensured by the development of logistics systems in a view of usage of resources in a country. As the activity of logistics systems is ground by creation of synergy effect and its use, this effect could be used for the increase of competitiveness of a country by its distribution in accordance with development levels of regions or economy sectors of this country. Thus, aims and a purpose of logistics systems directly influence the effectiveness of resources use, the nature of tangibles flows and the country’s competitiveness at all in an aspect of its sustainable development.

As the essence of harmonization process is a search of alternatives and compromises, the fast adaptation, the flexibility and the increase of effectiveness of systems activity, the authors determined that the success of economy development process in a country is dependent on logistic flexibility in a view of the
use of logistic infrastructure and the function of logistics systems. However, the specificity of country’s economy determines the form and nature of relations and processes inside the logistics system.

By the feedback between sectors of the country’s economy and logistics systems, it is possible to achieve and keep the business environment balance, which characterized through the development level and value of country’s economy, its competitiveness, on national and international levels in an aspect of logistics systems effectiveness and its contribution to GDP. The balance of business environment might be described through the ratio of infrastructure and environment plights, the level of dependence on energy resources, the particularities of elements’ connections in logistics systems based on peculiarities of country’s economy, the opportunity of its differentiation.

Conclusions

Through the analysis of functional particularities of logistics systems, the authors have come to the conclusion that the activity of logistics systems, its infrastructure use with the aim of economic growth is the necessity in global economy. Whereas the scope and aims of logistic systems and its infrastructure use become specific in reason of the impact of aims of country’s economic policy, focused on stable economic growth and long-term competitiveness of the country.

Principles of regional logistics allowed discovering a view on country’s competitiveness as a complex of competitive advantages, formed on basis of synergy effect of each region contribution, its logistics systems evaluation in an aspect of country’s development.

The conducted analysis enabled the authors of the paper to determine the main relations of logistics systems and country’s competitiveness. On this ground were formulated factors of logistics systems impact on the growth of country’s economy and its competitiveness. These factors are embodied through development levels of logistics systems and its infrastructure, conditions and impact factors of business environment, mobility and effective use of human, finance and other resources, receptivity for innovations.

By the study it was determined the direct dependence of country’s competitiveness and economy growth on investment into logistic infrastructure. In this instance the logistic infrastructure is analyzed as the main factor, ensuring movement of flows, and the measure to improve business conditions. Necessary resources for country’s economic growth ground the expediency of the logistics systems formation and its infrastructure use.

The opportunities to allocate and distribute processes and activities within the logistics systems, also the stability of relations of subjects of logistics systems, allow for sustainable development of country’s economy, relevant distribution of synergy effect of logistics systems activity. It affects the increase of effective use of resources and other economic values and relevant its distribution, i.e. it ensures the movement of material, finance and information flows. In this instance, movements of these flows inside logistics systems multiply the value of flows, and thus, it positively influences the indicators of country’s economy.

In a view of logistics systems function and its infrastructure use the growth of country’s economy and competitiveness are ground by logistic flexibility, however specificity of national economy determines the form and nature of relations and processes inside the logistics systems, especially in the structure of logistic infrastructure. Therefore, for the aim to generate the competitive advantages of the country it is necessary to improve the indicators of effectiveness of logistics systems activity and its infrastructure use. It allows for conductive conditions of created environment in purpose to form competitive advantages.

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