Zhanarys Raimbekov
D.Sc. (Economics), Professor,
L. N. Gumilyov Eurasian National University
2 Satpaev Str., Astana, 010010, Republic of Kazakhstan
zh_raimbekov@mail.ru

UDC 332.1:658.7

Bakyt Syzdykbayeva
D.Sc. (Economics), Professor,
L. N. Gumilyov Eurasian National University
2 Satpaev Str., Astana, 010010, Republic of Kazakhstan
bakyt_syzdykbaeva@mail.ru

Asel Baimbetova
PhD (Economics), Associate Professor,
L. N. Gumilyov Eurasian National University
2 Satpaev Str., Astana, 010010, Republic of Kazakhstan
asel_baymbetova@mail.ru

Zhibek Rakhmetulina
PhD (Economics), Associate Professor,
L. N. Gumilyov Eurasian National University
2 Satpaev Str., Astana, 010010, Republic of Kazakhstan
rahmetulina_zh@mail.ru

Evaluating the impact of logistics infrastructure on the functioning and development of regional economy

Abstract. In the article, key factors of development and main elements of logistics infrastructure are outlined, their impact on different areas of regional economy is evaluated. The authors conducted comparative study of different groups of factors and built an econometric model for some of them. The resulting regression made it possible to find important interdependencies for Kazakhstan, namely: increase of the demand for transport and logistics services by 1% leads to GRP increase by 7.013 billion tenge (USD 20.7 mln); the investment to the infrastructure sector increase by 1% leads to GRP increase by 0.638 billion tenge (USD 1.9 mln); the commodity stocks in warehouses increase by 1% leads to GRP increase by 2.747 billion tenge (USD 8.1 mln), and increase in tariffs on transportation by 1% results in GRP decrease by 25.745 billion tenge (USD 75.9 mln).

To increase the efficiency of the regional economy functioning, the authors introduced an approach to regulate and manage logistics infrastructure in the regions, incorporating the latest global trends as well as adapting to the unique needs of different macro-regions of Kazakhstan (in terms of their investment and logistics capacities). The carried out grouping of the Kazakh regions within the author approach made it possible to ground the formation and singling out the perspective growth poles which should become the country's integration zones with regional and global markets. They are the hubs in the following macro-regions: North with the centre in Astana; Central-East with its centre in Ust-Kamenogorsk city; West with the centre in Aktobe; South with its centres in Almaty and Shymkent. The economic characteristics and development potential of each growth pole is presented in the paper.

Keywords: Logistics Infrastructure; Transportation; Econometric Model; Economic Development; Economic Growth; GRP; Region; Growth Pole; Macro-region; Kazakhstan

JEL Classification: C15; N70; O11; O18; R11
DOI: https://doi.org/10.21003/ea.V160-20

Раімбеков Ж. С.
доктор економічних наук, професор, Євразійський національний університет ім. Л. Н. Ґумільова,
Астана, Республіка Казахстан
Сиздикбаєва Б. У.
доктор економічних наук, професор, Євразійський національний університет ім. Л. Н. Ґумільова,
Астана, Республіка Казахстан
Баймбетова А. Б.
кандидат економічних наук, доцент, Євразійський національний університет ім. Л. Н. Ґумільова,
Астана, Республіка Казахстан
Рахметуліна Ж. Б.
кандидат економічних наук, доцент, Євразійський національний університет ім. Л. Н. Ґумільова,
Астана, Республіка Казахстан

Оцінка впливу логістичної інфраструктури на функціонування та розвиток регіональної економіки

Анотація. У статті виділено ключові фактори та складові логістичної інфраструктури, проведено оцінку їх впливу на різні аспекти економіки регіонів (соціально-економічний розвиток, розміщення та оптимізацію товаропровідних структур, формування полюсів зростання та оптимізацію територіальної структури). Дослідження проводилося для кожної виділеної групи факторів шляхом порівняльного аналізу або побудови економетричної моделі. В ході аналізу встановлено характер взаємозв'язку логістичної інфраструктури та регіональної економіки, а також здійснено оцінку логістичної інфраструктури в залежності від зазначених факторів.

Ключові слова: логістична інфраструктура; економетрична модель; економічний розвиток; економічне зростання; регіон; Казахстан

Раимбеков Ж. С.
доктор экономических наук, профессор, Евразийский национальный университет им. Л. Н. Гумилева,
Астана, Республика Казахстан
Сыздыкбаева Б. У.
доктор экономических наук, профессор, Евразийский национальный университет им. Л. Н. Гумилева,
Астана, Республика Казахстан
Баймбетова А. Б.
кандидат экономических наук, доцент, Евразийский национальный университет им. Л. Н. Гумилева,
Астана, Республика Казахстан
Рахметулина Ж. Б.
кандидат экономических наук, доцент, Евразийский национальный университет им. Л. Н. Гумилева,
Астана, Республика Казахстан

Оценка влияния логистической инфраструктуры на функционирование и развитие региональной экономики

Аннотация. В статье выделены ключевые факторы и составляющие логистической инфраструктуры, проведена оценка их влияния на различные аспекты экономики регионов (социально-экономическое развитие, размещение и оптимизация товаропроводящих структур, формирование полюсов роста и оптимизация территориальной структуры). Исследования проводились для каждой выделенной группы факторов путем сравнительного анализа или построения эконометрической модели. В ходе анализа установлен характер взаимосвязи логистической инфраструктуры и региональной экономики, а также проведена оценка логистической инфраструктуры в зависимости от указанных факторов.
Ключевые слова: логистическая инфраструктура; эконометрическая модель; экономическое развитие; экономический рост; регион; Казахстан

1. Introduction

In contemporary economy, the role of logistics and its infrastructure in formation of the competitive advantages of the territory is growing. Development of logistics and infrastructure provides strong impetus for different activities at the regional level (domestic, export and transit potential in the transport of goods, cargo processing, etc.).

These issues are relevant for Kazakhstan, seeking to turn itself into international trade, logistics and business hub to ensure long-term economic growth of the republic [1]. To achieve this goal, central and local governments and private businesses are involved in the development and improvement of logistics infrastructure.

However, the question remains to what extent the development projects of logistics facilities will be optimal for specific regions of Kazakhstan. In our study, analysis of logistics infrastructure impact on the economic development of regions in Kazakhstan is carried out.

2. Brief Literature Review

Development of logistics infrastructure is one of the key factors for economic growth of the country, and it is aimed to ensure the delivery of commodities from producer to consumer with a maximum efficiency.

Problems in development of logistic infrastructure and methods of its evaluation were explained by R. Alarcona (2012) [2], J. Blyde (2015) [3], H. Lean (2014) [4], J. Vilko (2011) [5], B. Kolodin (1999) [6], D. Todorova (2004) [7], R. Sainz (2013) [8].

Issues of territorial development and impact assessment of logistical infrastructure on the competitiveness and efficiency of the regional economy were studied by O. Velychko (2014) [9], I. Gafurov (2014) [10], J. Tongzon [11], M. U. Uazhanov (2015) [12], D. Kokurin (2011) [13], A. Kizim (2013) [14], M. Lipichnik (2012) [15], B. Syzdykbaeva and Z. Raimbekov (2013) [16].

Development of logistics infrastructure is one of the major priorities for the economies across the globe. International practices emphasize priority of improving logistics management systems and elimination of non-physical limitations as a precondition of further development of infrastructure assets. According to the World Bank, in logistics performance indicators (LPI) ranking from 2014 Kazakhstan was 88th (out of 160 countries, above Sri Lanka, Russian Federation, Uruguay, Armenia and Moldova), while Germany, the Netherlands, Belgium, United Kingdom, Singapore were leading (from 1st to 5th, respectively) [17].

Overall quality of logistics infrastructure in Kazakhstan is inferior to the developed countries, primarily because of poor state of the country's transport infrastructure, caused by delays in renovation, lack of investment in modernization of ports, roads and airports, in construction of intermodal terminals. This gap is behind weaker competitive positions of the country comparing with some of its neighbours (namely, Russia and China) in attracting of international transit of goods. In turn this limits opportunities to increase the general volume of transit.

While research of the impact of logistics infrastructure on the regional economies are numerous, current state of the field presents no composite methodological approach to evaluate this impact on the whole real sector of the economy, as well as on separate sectors and territories.

3. Research goal

is to investigate the impact of logistics infrastructure on economic development, and to identify future directions of logistics infrastructure in the regions of Kazakhstan.

4. Results

Our analysis shows that for the development of manufacturing and economic growth, it is not enough to mass additional resources, but to incorporate their transportation into production chain, when resources are delivered to a manufacturer in due time, quantity and condition. Importance of the logistics infrastructure for the development of regional economy, in our opinion, can be reflected by the following elements.

1. Space and location of the logistics infrastructure as a factor of the socio-economic development of the country improvement.

It is possible to boost socio-economic development of the region with adequate and well-tuned logistics mechanism. It has to address peculiarities of the economic development of the region, location and spatial development of the territories. In such conditions, the business allocated in the certain regions will be able to cost-effectively ensure supply of regional consumer market with goods; also, new workplaces will be created boosting the rise of regional economies.

Economic density of the regions of Kazakhstan has a high degree of regional disparities, uneven distribution of productive forces and different levels of development of the regions [18]. The main reasons are low density and uneven distribution of the population of Kazakhstan. The density of population in the national average is 6.3 people per sq. km, while the regions ranged from 2.7 people per sq. km in Aktobe region to 23.5 people per sq. km in the South Kazakhstan region, with even higher numbers in big cities: Almaty (4105.8 per sq. km) and Astana (1218.4 per sq. km) [18].

There are several negative factors behind Kazakhstan's low economic density: unevenness of socio-economic development of regions; undeveloped logistical infrastructure of transport nodes which is limiting development of the logistic services; absence of river transport nodes; lack of access to the open seas.

Logistics infrastructure is affecting most aspects of regional development, which defines its impact on socio-economic development of the region. The gross regional product (GRP) is widely recognized as a main indicator of the level of socio-economic development of the region.

Almaty is leading the list of regions with almost 1/5 of the total amount of country's GRP (19% in 2014), while least successful among Kazakhstan's 16 regions Zhambyl and North Kazakhstan amount only 2.5% and 2.2% of total GRP respectively [19].

The assessment of the impact of logistics infrastructure on GRP starts with identification of infrastructure functioning indicators, among them are: volume of transport and logistics services; revenues from the transport and logistics activities; volume of trade; volume of industrial manufacturing; investment in the infrastructure; tariffs for transportation; income per capita, etc. [13; 16].

To assess the role of logistics infrastructure in the sustainable development of regional economy, we should define the indicators of the logistics infrastructure, significantly affecting the GRP. We choose the following: volume of transport and logistics services; volume of retail trade; volume of industrial production; investment in infrastructure sectors (transport and warehousing, information and communication); commodity stocks in a commercial network; tariffs for transportation of goods. The dynamics of the GRP and the abovementioned indicators for 2001-2015 is shown in Table 1.

Based on the results shown in Table 2, the dependence of Y on x_1, x_2, x_3, x_4, x_5 and x_6 will have the following form:

$$y = -1630.8 + 7.013x_1 + 0.445x_2 + 0.293x_3 + 0.638x_4 + 2.747x_5 - 25.745x_6$$

Table 2 shows that the coefficient of determination $R^2 = 0.8183$, which means that the regression equation (1) is adequate. The resulting regression equation (1) makes it possible to draw the following conclusions for Kazakhstan: if the demand for transport and logistics services increases by 1%, GRP will increase by 7.013 billion tenge (USD 20.7 mln); if the volume of retail trade increases by 1%, GRP will increase by 0.445 billion tenge (USD 1.3 mln); if the volume of industrial production will increase by 1%, GRP will increase by 0.293 billion tenge (USD 0.864 mln); if the investment to the infrastructure sector increases by 1%, GRP will increase by 0.638 billion tenge (USD 1.9 mln); if the commodity stocks in warehouses increases by 1%, then GRP will increase by 2.747 billion tenge (USD 8.1 mln), and increase in tariffs on transportation by 1% would lead to decrease in GRP by 25.745 billion tenge (USD 75.9 mln).

It should be noted that the demand for transport and logistics services, changes in tariffs and commodity stocks in the commercial network have much greater impact on GRP than all other factors.

On the basis of the model (1), GRP can be regulated by using the above levers (volume of production in industry, retail trade, investments, commodity stocks in trade, tariffs) in the interests of the state.

Thus, the results of the econometric analysis were used to determine the nature of the relationship of logistics infrastructure and regional economy, as well as to assess the situation, and to test the ability to make predictions.

2. Logistics infrastructure as a factor of development and optimization of market of commodity distribution services and networks in the region

Market optimization of commodity distribution services and networks in the regions is the process of determining the best options and schemes of commodity distribution services and networks, which is carried out by comparing all possible alternatives.

In order to determine the optimal tool for the state stimulation of logistics infrastructure development in the regions of Kazakhstan, a differentiation of regions by a number of economic indicators was held.

The authors selected two groups of indicators that characterize the full impact of the logistics infrastructure potential on the economy of a particular region:

1. Investment attractiveness (IA) of logistics infrastructure in the region, which includes the indicators shown in Table 3.

2. Logistics potential (LP) of infrastructure development of commodity distribution network in the region. Method of integrated evaluation of logistical potential, proposed by the authors, includes the following groups of parameters [16]: characteristics of the transport and logistics sector of activity; potential development of logistics infrastructure; potential development of trading infrastructure; potential of institutional security in industry.

To build the LP, data from the Committee on Statistics of the Republic of Kazakhstan were used [22, 23].

Tab. 2: **Results of correlation and regression analysis**

Dependent Variable: Y
Method: Least Squares
Date: 04/17/16   Time: 18:54
Sample: 2001 2015
Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	7.013631	42.19493	0.166220	0.06721
X2	0.445260	34.29487	0.129830	0.05900
X3	0.292994	1.710679	0.171274	0.07683
X4	0.638032	21.18142	0.030122	0.02767
X5	2.747426	149.8624	0.018333	0.04858
X6	-25.74525	790.2859	-0.032577	0.00748
C	-1630.833	24297.07	-0.067121	0.05481
R-squared	0.818382	Mean dependent var		20094.53
Adjusted R-squared	0.682168	S.D. dependent var		12834.05
S.E. of regression	7235.395	Akaike info criterion		20.91608
Sum squared resid	4.19E+08	Schwarz criterion		21.24651
Log likelihood	-149.8706	Hannan-Quinn criter.		20.91256
F-statistic	6.008082	Durbin-Watson stat		1.259433
Prob (F-statistic)	0.011937			

Note: Y – Gross regional product; $X1$ – demand for transport and logistics services; $X2$ – volume of retail trade; $X3$ – volume of industrial production; $X4$ – investment to fixed assets of infrastructure sectors (transport and warehousing); $X5$ – commodity stocks in commercial network.
Source: Elaborated by the authors

Tab. 1: **Dynamics of growth of GRP and some logistics infrastructure indicators in Kazakhstan, 2001-2015**

Year	GRP, bln tenge (USD bln)	Transportation services, bln tenge (USD bln)	Volume of retail trade, bln tenge (USD bln)	Volume of industrial production, bln tenge (USD bln)	Investment in the industry, mln tenge (USD mln)	Commodity stocks, bln tenge (USD bln)	Change of tariffs for transportation of goods, %
	Y	x1	x2	x3	x4	x5	x6
2001	25123.6 (74.2)	1174.7 (3.5)	801.7 (2.4)	1942.4 (5.7)	127.4 (0.38)	15.9 (0.05)	6.5
2002	3 776.3 (11.1)	1249.7 (3.7)	895.4 (2.6)	2354.3 (6.9)	135.2 (0.40)	17.3 (0.06)	8.9
2003	4 611.9 (13.6)	1315.4 (3.9)	968.9 (2.9)	2845.9 (8.4)	158.7 (0.47)	18.2 (0.07)	12.6
2004	5 870.1 (17.3)	1414.5 (4.2)	1218.9 (3.6)	3878.8 (11.4)	185.1 (0.55)	24.3 (0.08)	4.9
2005	7 590.6 (22.4)	1520.9 (4.5)	1408.7 (4.2)	5281 (15.6)	194.3 (0.57)	34.9 (0.10)	8.1
2006	10 213.7 (30.1)	1618.0 (4.8)	1736.8 (5.1)	6547.4 (19.3)	238.4 (0.70)	58.4 (0.17)	10.4
2007	12 849.8 (37.9)	1758.4 (5.2)	2092.8 (6.2)	7856.5 (23.2)	280.4 (0.83)	131.1 (0.39)	0.9
2008	16 052.9 (47.4)	2052.5 (6.1)	2442.8 (7.2)	10194.7 (30.1)	478.8 (1.41)	110.7 (0.33)	8.9
2009	17 007.6 (50.2)	2123.8 (6.3)	2551.4 (7.5)	9121.5 (26.9)	698.0 (2.06)	106.6 (0.31)	3.7
2010	21 815.5 (64.4)	2531.6 (7.5)	3197.1 (9.4)	16105.5 (47.5)	465.3 (1.37)	136.9 (0.40)	11.8
2011	29 379.8 (86.7)	2903.2 (8.6)	3865.8 (11.4)	15929.1 (47.0)	658.7 (1.94)	186.8 (0.55)	14.7
2012	32 193.7 (95.0)	3439.5 (10.2)	4567.7 (13.5)	16851.8 (49.7)	775.0 (2.29)	230.8 (0.68)	10.2
2013	37 085.3 (109.5)	4004.6 (11.8)	5474.3 (16.2)	17833.9 (52.6)	764.0 (2.26)	280.2 (0.83)	9.1
2014	40 754.8 (120.3)	4600.4 (13.6)	6332.3 (18.7)	18531.7 (54.7)	814.2 (2.40)	324.8 (0.96)	13.2
2015	37092.4 (109.5)	4613.8 (13.6)	6306.9 (18.6)	18235.2 (53.8)	983.8 (2.90)	367.3 (1.08)	9.1

Source: Compiled by the authors based on data by Committee on Statistics of the Republic of Kazakhstan [20-21]

We used the ranking of regions based on investment attractiveness (IA) and logistic potential (LP) infrastructure development of the regions (see Table 3). The ranking is determined by relationship of regional index and national average value of index for each group of indicators.

Similarly, the logistics potential for each region according to the authors method [11] was defined, taking into account the above-mentioned groups of indicators.

Regions in the ranking are divided into three groups according to investment attractiveness and potential of logistics infrastructure development:
- first group (total coefficient is 0.270-0.475) consists of attractive regions, with high demand for logistics infrastructure development and likely return of investments in logistics infrastructure of Almaty and Almaty region, Astana city, Aktobe, Karaganda, South Kazakhstan and Mangistau regions. The development of infrastructure in these regions has high pace and its impact on the socio-economic development is considerable;
- second group (total coefficient is 0.200-0.269) consists of relatively attractive regions with average investment attractiveness, and average demand for logistics infrastructure development: East Kazakhstan, Kostanay, Pavlodar, West Kazakhstan, Atyrau regions. These regions are characterized by mid- to small impact on the socio-economic development by logistics infrastructure;
- unattractive regions with low investment attractiveness are gathered in third group (total coefficient is 0.100-0.199), they share low demand for logistics infrastructure development: North-Kazakhstan, Zhambyl, Kyzylorda regions. These regions are characterized by a low impact of logistics infrastructure on a socio-economic development.

These data allow us to estimate the prospects of the logistics infrastructure development and its impact on the development and optimization of commodity distribution networks in the regional economy.

Hence, the State and business in the process of development and optimization of commodity distribution networks in the regions need to take into account the needs of each group of the regions according to their individual needs.

3. Regional logistics infrastructure as pole of growth of regional economy and territorial structure optimization requirements.

Competitive advantages theory by M. Porter (1993) [24] with its concept of accommodation and growth poles occupies one of the leading roles among growth models of regional economies.

To concentrate on balanced policy of territorial development, the authors provided predictive model for spatial development of Kazakhstan [18] focused on the development of regional logistics infrastructure. This model involves such elements of spatial development as macro-regions (groupings of regions that are similar in their economic, environmental and socio-demographic characteristics); city hubs (centres of national and regional cooperation); magistralisation (increase of speed and carrying capacity); agglomeration (increase of short-range communications within cluster of neighbouring settlements around one or several cities-cores).

We concluded that the spatial development of Kazakhstan includes: 1) establishment of centres of economic growth, i.e. development of the regions, which then spreads onto other regions or countries; 2) development of macro-regions based on the hubs and radiation principles. These principles allow to develop more evenly the logistics infrastructure in local spots at the place of origin of cargo flows,

further spreading to the sites of their cargo processing and transshipment; and to link all local areas of Kazakhstan with the capital, providing sustainability to their development. Therefore, perspective growth poles, able to provide the economic development of Kazakhstan and to act as the country's integration zones with regional and global markets, are represented by the hubs in the following macro-regions: North with the centre in Astana; Central-East with its centre in Ust-Kamenogorsk city; West with its centre in Aktobe; South with its centres in Almaty and Shymkent. Prospects for the development of these macro-regions allowed the authors to determine directions, types and forms of organization of logistics infrastructure in these macro-regions.

The development of the Northern macro-region (Akmola, Kostanay, North Kazakhstan regions) will be primarily focused on agriculture, which requires development of warehouses and logistics centres for agricultural products, and agro-industrial complex and food processing.

In the southern macro-region (Zhambyl, Kyzylorda, South Kazakhstan, Almaty regions) agriculture, fruit and vegetable, and the cotton-textile cluster will be developed. There we expect high demand on transport terminals, warehouse complexes, and logistics centres for both agricultural and processing industries, and textile products.

The main perspectives of the development of Western macro-region (Atyrau, Mangistau, West Kazakhstan, Aktobe regions) will be related to mining, oil and gas industries petrochemistry, and production of innovative products with high added value. This region will develop innovative logistics infrastructure, with priority aim to provided services to oil and gas, and petrochemical industries.

In the Central-East (Pavlodar, Karaganda, East Kazakhstan regions) macro-region a non-ferrous metallurgy, oil refining, manufacturing, and coal industries, as well as agriculture were developed. Thus, logistics infrastructure to support industry (metallurgical, mining and manufacturing), and general logistics infrastructure should be developed. For Pavlodar, Karaganda, Akmola, East-Kazakhstan regions primary focus remains on logistics infrastructure for coal mining, mining of iron agglomerated and non-agglomerated ores.

It is necessary to develop transport and logistics infrastructures for mining and enrichment of iron and aluminium ore (bauxites) in Kostanay and Pavlodar regions, copper ore - in Karaganda region, lead and zinc - in East Kazakhstan region, where its production and processing are concentrated.

Extraction and export of natural resources have led to economic and social growth of Kazakhstan. At the same time the lack of access to the sea, long distances to major markets require an accelerated development of transport and logistics infrastructure.

Tab. 3: **Indicators of investment attractiveness of logistics infrastructure of the regions and logistics potential of infrastructure development of commodity distribution network**

Region	Indicators of the region's investment attractiveness					Total	
	Population	Level of investment activity	Population density / share of urban population	Level of consumer incomes	Gross domestic product per capita	Investment attractiveness of the region*	logistics potential**
1	2	3	4	5	6	7	8
Akmola	0.033	0.156	0.063	0.017	0.035	0.304	0.262
Aktobe	0.033	0.161	0.045	0.013	0.073	0.325	0.286
Almaty	0.062	0.148	0.039	0.007	0.079	0.335	0.351
Atyrau	0.015	0.062	0.013	0.025	0.101	0.216	0.232
West Kazakhstan	0.035	0.094	0.032	0.012	0.066	0.239	0.227
Zhambyl	0.041	0.079	0.046	0.007	0.025	0.198	0.217
Karaganda	0.053	0.103	0.035	0.012	0.089	0.292	0.263
Kostanay	0.038	0.083	0.028	0.094	0.023	0.266	0.245
Kyzylorda	0.029	0.079	0.033	0.009	0.068	0.218	0.198
Mangistau	0.017	0.089	0.018	0.017	0.077	0.218	0.223
South Kazakhstan	0.078	0.088	0.031	0.005	0.074	0.276	0.283
Pavlodar	0.036	0.075	0.047	0.013	0.069	0.24	0.239
North Kazakhstan	0.019	0.062	0.049	0.009	0.018	0.157	0.128
East Kazakhstan	0.059	0.075	0.035	0.01	0.065	0.244	0.345
Astana city	0.041	0.141		0.028	0.111	0.321	0.422
Almaty city	0.062	0.143		0.029	0.123	0.357	0.475

Notes: * - line 7 = line 2 + line 6; ** - calculated using the authors' method [16].
Source: Elaborated by the authors

It is necessary to plan the development of logistics infrastructure, with emphasis on efficiency of natural resources export.

5. Conclusions

Regional policy and development strategies should evaluate state of logistics infrastructure as an important factor of social and economic development, growth of competitiveness, and reduction of costs through optimisation of distribution networks. Logistics infrastructure development should not be seen as minor element of public policy, but should become important factor of socio-economic development of the country.

It is necessary not to limit our attention to the performance of physical elements of infrastructure, which is often the case for decisions on investments in to logistics infrastructure, but to improve efficiency of existing networks, management in logistics infrastructure, as well as to urge regional governments to increase their use.

The factors discussed above have a positive effect on economic growth and the effectiveness of regional development, thus they should be considered as a part of the development strategies for territories.

It is important to build new logistics infrastructure, and to improve economic mechanism of existing logistics infrastructure for every region, to elaborate support measures by the government, business and society for the development of logistics infrastructure.

References

1. The President of the Republic of Kazakhstan (2014, January 13). *Government program of development and integration of transport system infrastructure of the Republic of Kazakhstan until 2020.* Decree of the President of the Republic of Kazakhstan from January 13, 2014. Retrieved from http://online.zakon.kz
2. Alarcona, R., Antun, J. P., Lozanoa, A. (2012). Logistics competitiveness in a megapolitan network of cities: A theoretical approach and some application in the Central Region of Mexico. *Procedia – Social and Behavioral Sciences, 39,* 739-752. doi: http://dx.doi.org/10.1016/j.sbspro.2012.03.144
3. Blyde, J., & Molina, D. (2015). Logistics infrastructure and the international location of fragmented production, *Journal of International Economics, 95*(2), 319-332. doi: http://dx.doi.org/10.1016/j.jinteco.2014.11.010
4. Lean, H. H., Huang, W., & Hong, J. (2014). Logistics and economic development: Experience from China. *Transport Policy, 32,* 96-104. doi: http://dx.doi.org/10.1016/j.tranpol.2014.01.003
5. Vilko, J., Karandassov, B., & Myller, E. (2011). Logistic Infrastructure and Its Effects on Economic Development. *China-USA Business Review, 11,* 1152-1167. Retrieved from http://search.proquest.com/openview/482aadb0c2ed72287c885b835eb03d57/1?pq-origsite=gscholar
6. Kolodin, V. S. (1999). *Logistics infrastructure of a regional commodity market.* Irkutsk: IGEA (in Russ.).
7. Todorova, D. (2004). Logistics Infrastructure - An Attempt at a Definition. *Economic Thought, 5,* 91-111. Retrieved from https://www.ceeol.com/search/article-detail?id=187444
8. Sainz, R. (2013). The economic impact of logistics infrastructure: the case of PLAZA - the Zaragoza Logistics Platform. *Transportation Planning and Technology, 36*(4), 299-318. doi: http://dx.doi.org/10.1080/03081060.2013.798480
9. Velychko, O. (2014). Development of infrastructural objects of logistics providing in the system of plant cultivation production storing. *Economic Annals-XXI, 1-2*(1), 110-113. Retrieved from http://soskin.info/en/ea/2014/1-2/contents_28.html
10. Gafurov, I., Panasyuk, M., & Pudovik, E. (2014). Interregional logistic center as the growth point of regional economics. *Procedia Economics and Finance. International Conference, Romania, 15,* 474-480. doi: http://dx.doi.org/10.1016/S2212-5671(14)00486-9
11. Tongzon, J., & Cheong, I. (2014). The challenges of developing a competitive logistics industry in ASEAN countries. *International Journal of Logistics-Research and Applications, 17*(4), 323-338.
12. Uazhanov, M. U. (2015). Key directions in transport and logistics infrastructure development in the Republic of Kazakhstan. *Actual Problems of Economics*, *167*(5), 161.
13. Kokurin, D. I., & Nazin, K. N. (2011). Influence of logistics infrastructure on the state of the economy: regional aspect. *Logistics and Supply Chain Management, 45*(4), 57-67 (in Russ.).
14. Kizim, A., & Demchenko, A. (2013). Growth factors and threats to the development of modern transport and logistics infrastructure of the Russian territories. *Science and Education: Agriculture And Economics; Entrepreneurship; Law And Governance. 10,* 7-16 (in Russ.).
15. Lipichnik, M. I., Lukinykh, V. F., & Shvalov, P. G. (2012). Logistics infrastructure as a factor of increasing the competitiveness of the territory. Retrieved from http://kgau.ru/new/all/konferenc/konferenc/2012/e38.doc (in Russ.).
16. Syzdykbaeva, B. U., Raimbekov, Zh. S., & Zhumataeva, B. A. (2013). Evaluation of the development effectiveness of transport and logistics potential of the regions of Kazakhstan. *Actual Pproblems of Economics, 5,* 473-482 (in Russ.).
17. The World Bank (2014). *Connecting to Compete 2014: Trade Logistics in the Global Economy - The Logistics Performance Index and Its Indicators.* Retrieved from https://openknowledge.worldbank.org/handle/10986/20399?show=full
18. The President of the Republic of Kazakhstan (2015, August 25). *Predictive scheme for territorial and spatial development of the country until 2020.* Decree of the President of the Republic of Kazakhstan from August 25, 2015. Retrieved from http://egov.kz/wps/portal
19. Committee on Statistics of the Republic of Kazakhstan (2016). *Volume index of gross regional product by types of economic activity.* Retrieved from http://www.stat.gov.kz/getImg?id=WC16200030261
20. Committee on Statistics of the Republic of Kazakhstan (2016). *Dynamics of the major socio-economic indicators of the Republic of Kazakhstan.* Retrieved from http://www.stat.gov.kz
21. Committee on Statistics of the Republic of Kazakhstan (2016). *Investment in fixed assets by economic activity of investors.* Retrieved from http://www.stat.gov.kz
22. Committee on Statistics of the Republic of Kazakhstan (2015). *Regions of Kazakhstan in 2014. Statistical Yearbook.* Retrieved from http://www.stat.gov.kz
23. Committee on Statistics of the Republic of Kazakhstan (2015). *Transport in the Republic of Kazakhstan. 2010-2014. Statistical Yearbook.* Retrieved from http://www.stat.gov.kz
24. Porter, M. (1993). International Competition. Moscow: International Relations (in Russ.).

Received 18.04.2016

Литература

1. Государственная программа развития и интеграции инфраструктуры транспортной системы Республики Казахстан до 2020 года [Электронный ресурс] / Указ Президента Республики Казахстан от 13 января 2014 г. – Режим доступа : http://online.zakon.kz
2. Alarcona R. Logistics competitiveness in a megapolitan network of cities: A theoretical approach and some application in the Central Region of Mexico / R. Alarcona, J. P. Antun, A. Lozanoa // Procedia – Social and Behavioral Sciences. – 2012. – Vol. 39. – С. 739–752. doi: http://dx.doi.org/10.1016/j.sbspro.2012.03.144
3. Blyde J. Logistic infrastructure and the international location of fragmented production / J. Blyde, D. Molina // Journal of International Economics. – 2015. – Vol. 95. – P. 319–332. doi: http://dx.doi.org/10.1016/j.jinteco.2014.11.010
4. Lean H.H. Logistics and economic development: Experience from China / H. H. Lean, W. Huang, J. Hong // Transport Policy. – 2014. – Vol. 32. – P. 96–104. doi: http://dx.doi.org/10.1016/j.tranpol.2014.01.003
5. Vilko J. Logistic Infrastructure and Its Effects on Economic Development [Electronic resource] / J. Vilko, B. Karandassov, E. Myller // China–USA Business Review. – 2011. – No. 11. – P. 1152–1167. – Access mode : http://search.proquest.com/openview/482aadb0c2ed72287c885b835eb03d57/1?pq-origsite=gscholar
6. Колодин В. С. Логистическая инфраструктура регионального товарного рынка / В. С. Колодин. – Иркутск: ИГЭА, 1999. – 173.
7. Todorova D. Logistics Infrastructure – An Attempt at a Definition [Electronic resource] / D. Todorova // Economic Thought. – 2004. – № 5. – P. 91–111. – Access mode : https://www.ceeol.com/search/article-detail?id=187444
8. Sainz R . The economic impact of logistics infrastructure: the case of PLAZA – the Zaragoza Logistics Platform / R.Sainz // Transportation Planning and Technology. – 2013. – Vol. 36, No. 4. – P. 299–318. doi: http://dx.doi.org/10.1080/03081060.2013.798480
9. Velychko O. Development of infrastructural objects of logistics providing in the system of plant cultivation production storing [Electronic resource] / O. Velichko // Economic Annals-XXI. – 2014. – No. 1–2 (1). – P. 110–113. – Access mode : http://soskin.info/en/ea/2014/1-2/contents_28.html
10. Gafurov I. Interregional logistic center as the growth point of regional economics / I. Gafurov, M. Panasyuk, E. Pudovik // Procedia Economics and Finance. International Conference, Romania. – 2014. – Vol .15. – P. 474–480. doi: http://dx.doi.org/10.1016/S2212-5671(14)00486-9
11. Tongzon J. The challenges of developing a competitive logistics industry in ASEAN countries / J. Tongzon, I. Cheong // International journal of logistics-research and applications. – 2014. – Vol. 17, Iss. 4. – P. 323–338.
12. Uazhanov M. U. Key directions in transport and logistics infrastructure development in the Republic of Kazakhstan / M. U.Uazhanov // Actual Problems of Economics. – 2015. – Vol. 167, Iss. 5. – P. 161.
13. Кокурин Д. И. Влияние логистической инфраструктуры на состояние экономики: региональный аспект / Д. И. Кокурин, К. Н. Назин // Логистика и управление цепями поставок. – 2011. – С. 57–67.
14. Кизим А. Факторы роста и угрозы развития современной транспортно-логистической инфраструктуры российских территорий / А. Кизим, А. Демченко. // Наука и образование: хозяйство и экономика; предпринимательство; право и управление. – 2013. – № 10. – С. 7–16.
15. Липичник М. И. Логистическая инфраструктура как фактор повышения конкурентоспособности территории [Электронный ресурс] / М. И. Липичник, В. Ф. Лукиных, П. Г. Швалов. – 2012. – Режим доступа : http://kgau.ru/new/all/konferenc/konferenc/2012/e38.doc
16. Сыздыкбаева Б. У. Оценка эффективности развития транспортно-логистического потенциала регионов Казахстана / Б. У. Сыздыкбаева, Ж. С. Раимбеков, Б. А. Жуматаева // Actual problems of economics. – 2013. – № 5. – С. 473–482.
17. Logistics Performance Index: Connecting to Compete. International LPI 2014 [Электронный ресурс] / World Bank. – 2014. – Режим доступа : https://openknowledge.worldbank.org/handle/10986/20399?show=full
18. Прогнозная схема территориально-пространственного развития страны до 2020 года [Электронный ресурс] / Указ Президента Республики Казахстан от 25 августа 2015 года. – 2015. – Режим доступа : http://egov.kz/wps/portal
19. Валовой региональный продукт Республики Казахстана [Электронный ресурс] / Комитет по статистике Республики Казахстан. – 2015. – Режим доступа : http://www.stat.gov.kz/getImg?id=WC16200030261
20. Динамика основных социально-экономических показателей Республики Казахстан [Электронный ресурс] / Комитет статистики Республики Казахстан. – 2016. – Режим доступа : http://www.stat.gov.kz
21. Инвестиции в основной капитал по видам экономической деятельности инвесторов [Электронный ресурс] / Комитет статистики Республики Казахстан. – 2016. – Режим доступа : http://www.stat.gov.kz
22. Регионы Казахстана в 2014 году. Статистический ежегодник [Электронный ресурс] / Под ред. А. Смаилова. – Астана, 2014. – 420 с. – Режим доступа : http://www.stat.gov.kz
23. Транспорт в Республике Казахстан. 2010–2014. Статистический сборник. – Астана, 2015. – 67 с. – Режим доступа :http://www.stat.gov.kz
24. Портер М. Международная конкуренция / М. Портер. – М. : Международные отношения, 1993. – 374 с.

Статья поступила в редакцию 18.04.2016