The State of the World Transport and Logistics Infrastructure and Transport and Logistic Services Market

The research provides an overview of the state of the world transport and logistics infrastructure and transport and logistic services market. Globalisation of international economic relations imposes new requirements on the efficiency of transport and logistics infrastructure. The author studies the current state of the objects of world transport and logistics infrastructure, defines their essence and elaborates on their structure. The paper examines main trends in transport and logistics infrastructure development in recent years, paying special attention to the infrastructure objects of the rail transport, container transport as well as to port development. The author scrutinises the state and structure of the global transport and logistic services market, gives its geographical and product structure, and discovers the reasons behind the changes in the market structure.

JEL classification: N70, O18, R40

Keywords: transport and logistics infrastructure; transport and logistic services; market; trend; global economy.

Introduction

World transport and logistics infrastructure and transport and logistic services market are developing in conditions of international integration processes. The impact of these processes on freight traffic is linked with countries’ aspirations for more complete integration and manifests itself in creation of unified transport and logistic systems.

Multiple economic relations between countries kindle their mutual interest in building efficient integrated transport and logistics infrastructure with elements standardized to a maximum. Such kind of transport and logistics infrastructure should satisfy the requirements of high capacity and acceptable level of organisation and maintenance of the functioning of supply channels.


Problems and prospects of development of the world and transport and logistic services market are investigated by foreign scholars J. Pradabwong, C. Braziotis, K. S. Pawar, S. Vendela, T. Erfurth, J. Bendul, Yi-Chih Yang, Chi-Yu Sung, M. M. Penteado Marchesini, R. L. Chicarelli Alcantara, Y.-J. Seo, J. Dinwoodie and M. Roe and others [19; 22–26].

Recently more attention has been directed to the research of the trends in development of the world transport and logistics infrastructure and transport and logistic services market, for instance, by such economists as A. V. Vlasov, M. V. Zhobolenko, V. A. Karasiev, V. V. Klimenko, V. O. Kozhina, M. M. Kuznetsov, M.A. Kuzmina, Yu. P. Mironova and S. L. Nadiryan, N. N. Panasenko and P. V. Yakovlev and others [1; 5; 6–8; 10; 11; 13].
The goal of this paper is to assess the current state of the objects of the world transport and logistics infrastructure and analyse the transport and logistic services market. To achieve this goal the author is going to fulfil the following three tasks: first, to study main factors in transformation of the world transport and logistics infrastructure; second, to examine the condition of the objects of the world transport and logistics infrastructure; third, to justify the reasons behind the changes in the structure of the world transport and logistic services market.

Essence of the objects of transport and logistics infrastructure

We regard transport and logistics infrastructure as a set of objects of transport and logistics subsystem of the national economy united by common tasks, processes and functions and forming single transport and logistic infrastructural space. Fig. 1 presents the author’s view of the structure of the objects of transport and logistics infrastructure at macro-level.

As it was mentioned previously, the processes of international economic integration have developed into one of the major factors in transformation of the global transport and logistics system. Along with this factor there are some others, which can be grouped into four types: economic, institutional, technological and environmental [17]. The cumulative impact of these factors on development of the transport and logistic services market has become increasingly visible in past decades. In this context, let us consider the key indicators characterizing the
State of the objects of world transport and logistics infrastructure

Growth in the volume of the foreign trade and domestic trade in the world has led to a respective increase in total length of railway lines (Fig. 2).

The total length of railway lines, which is one of the main objects of the transport and logistics infrastructure, started to decrease in 2010, as well as the volume of goods transported by this means of transport. These trends can be attributed to a decline in volume of transportation in the European countries and the USA and to a shift in the demand in transport and logistics services market from rail to other types of transport, particularly to container transport [18]. In addition, the trends were significantly brought about by an altered geographical structure of the world trade, namely by a shift towards the countries of Asia-Pacific that was followed by changes in routes and means of freight transport.

Since 2000, the world has been observing a steady growth in container traffic (Fig. 3). In 2014, around 679.2 million containers (in 20 foot equivalent units) were transported in the world. The transport structure is changing in favour of the Asia-Pacific countries, which account for 55% of the world’s container traffic (Fig. 4).

Eight out of the top ten ports involved in container traffic are located in Asia-Pacific, of which six are situated in China (Table 1).

The next most important means of freight transport globally is air transport. Fig. 5 presents the dynamics of air freight transport in 2010–2015. Air transport infrastructure is a growing segment of the world transport and logistics infrastructure. In 2015 the number of registered carrier departures amounted to 32.9 million units and the volume of freight transported by air reached 188 million ton-km.

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**Fig. 3.** World container traffic, 2000–2014

**Fig. 4.** Changes in the geographical structure of container traffic by regions, 2000–2014, %

**Fig. 5.** Air freight transport worldwide, 2010–2015

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1 Note. Data for container port traffic (TEU: 20 foot equivalent units) from the World Bank. Available at: http://data.worldbank.org/indicator/IS.SHP.GOOD.TU.

2 Ibid.

### Table 1

<table>
<thead>
<tr>
<th>Rank</th>
<th>Port</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shanghai, China</td>
<td>31.7</td>
<td>32.5</td>
<td>33.62</td>
<td>35.3</td>
<td>36.5</td>
</tr>
<tr>
<td>2</td>
<td>Singapore</td>
<td>29.9</td>
<td>31.7</td>
<td>32.6</td>
<td>33.9</td>
<td>30.9</td>
</tr>
<tr>
<td>3</td>
<td>Shenzhen, China</td>
<td>22.6</td>
<td>22.9</td>
<td>23.28</td>
<td>24.0</td>
<td>24.2</td>
</tr>
<tr>
<td>4</td>
<td>Ningbo-Zhoushan, China</td>
<td>14.7</td>
<td>16.8</td>
<td>17.3</td>
<td>19.5</td>
<td>20.6</td>
</tr>
<tr>
<td>5</td>
<td>Hong Kong, S.A.R., China</td>
<td>24.4</td>
<td>23.1</td>
<td>22.4</td>
<td>22.2</td>
<td>20.1</td>
</tr>
<tr>
<td>6</td>
<td>Busan, South Korea</td>
<td>16.2</td>
<td>17.0</td>
<td>17.69</td>
<td>18.7</td>
<td>19.5</td>
</tr>
<tr>
<td>7</td>
<td>Qingdao, China</td>
<td>13.0</td>
<td>14.5</td>
<td>15.52</td>
<td>16.6</td>
<td>17.5</td>
</tr>
<tr>
<td>8</td>
<td>Guangzhou Harbor, China</td>
<td>14.4</td>
<td>14.7</td>
<td>15.31</td>
<td>16.2</td>
<td>17.2</td>
</tr>
<tr>
<td>9</td>
<td>Jebel Ali, Dubai, United Arab Emirates</td>
<td>13.0</td>
<td>13.3</td>
<td>13.64</td>
<td>15.3</td>
<td>15.6</td>
</tr>
<tr>
<td>10</td>
<td>Tianjin, China</td>
<td>11.6</td>
<td>12.3</td>
<td>13.01</td>
<td>14.1</td>
<td>14.1</td>
</tr>
</tbody>
</table>


### State of the world transport and logistic services market

The state of the objects of the world transport and logistics infrastructure directly and indirectly affects the development of the world transport and logistic services market. Speaking about the direct impact, it is manifested in creation of the new segments of entrepreneurial activities in the field of transport and logistics, whereas the indirect impact is seen in encouraging the development of diverse forms of entrepreneurship in different countries of the world [20].

Recent years have witnessed the formation of an independent direction of entrepreneurship in the field of transport and logistics, namely provision of transport and logistic services (outsourcing of transport and logistic services). The market of these services has been expanding steadily since 2009 and in 2015 its size reached 4.5 billion US dollars (Fig. 6).

![Fig. 6. World transport and logistic services market, 2008–2015](image)

The growth in the world transport and logistic services market is mostly attributed to the formation of the new market of integrated logistics solutions (Fig. 7).

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According to the generally accepted classification, there are several levels of transport and logistics services (Table 2) and, respectively, segments of entrepreneurial activities in the field of transport and logistics [3; 12].

**Table 2**

<table>
<thead>
<tr>
<th>Level</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PL (First Party Logistics) – “autonomous logistics”</td>
<td>Freight owner independently performs basic logistics operations, using, as a rule, its own vehicles and its own drivers</td>
</tr>
<tr>
<td>2PL (Second Party Logistics) – “traditional logistics” or partial outsourcing of logistic services</td>
<td>The company performs part of the logistics functions (planning, warehousing, forming supply chains), but some of the functions are transferred to a third-party transportation organisation, since the company does not have its own vehicles. The contractor is a transport company that performs a limited set of functions and has a limited region of transportation</td>
</tr>
<tr>
<td>3PL (Third Party Logistics) – complex logistics outsourcing</td>
<td>This type of services refers to a complex of the transport and logistic services performed by 3PL providers, which are specialised companies and to which all or most of the logistics operations are transferred. 3PL providers are highly qualified companies having their own specialists with appropriate professional competence. 3PL providers are not involved in planning of the whole logistics chain of a client and are not included in the client’s economic activities. The company provides a complex of transport and logistic services, including transportation, warehousing, inventory management, packaging and freight forwarding</td>
</tr>
<tr>
<td>4PL (Fourth Party Logistics) – integrated logistics outsourcing</td>
<td>A complex of the transport and logistic services, which implies that the manufacturing company expands the range of the contractor’s responsibilities and assigns the tasks of designing and planning supply chains and managing logistics business processes to a third party</td>
</tr>
<tr>
<td>5PL (Fifth Party Logistics) – virtual logistics</td>
<td>Provision of a complex of the transport and logistic services, including, in addition to 4PL complex, online business services (eBay, Aliexpress, Amazon, etc.)</td>
</tr>
</tbody>
</table>

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Fig. 8 shows that in the previous years there has been a steady growth of 3PL logistic services. The share of this type of transport and logistic services increased up to 17.4% in 2015, and its volume reached 768 billion US dollars.

We can anticipate further growth of this type of transport and logistics services in the coming years due to the desire of large producers to transfer non-core activities to outsourcing. The largest segment of the world market of 3PL services are the countries of the Asia-Pacific region (Table 3).

Table 3

<table>
<thead>
<tr>
<th>Region</th>
<th>GDP, billion US dollars</th>
<th>Share of transport and logistic services in GDP, %</th>
<th>Logistic services, billion US dollars</th>
<th>Share of 3PL services in transport and logistic services market, %</th>
<th>3PL services, billion US dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>20.7</td>
<td>8.6</td>
<td>1.75</td>
<td>10.7</td>
<td>190.1</td>
</tr>
<tr>
<td>Europe</td>
<td>16.1</td>
<td>9.2</td>
<td>1.47</td>
<td>10.5</td>
<td>154.5</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>23.8</td>
<td>13.5</td>
<td>3.29</td>
<td>8.5</td>
<td>276.9</td>
</tr>
<tr>
<td>South America</td>
<td>3.4</td>
<td>11.9</td>
<td>0.41</td>
<td>8.6</td>
<td>35.3</td>
</tr>
<tr>
<td>Other regions</td>
<td>9.9</td>
<td>17.5</td>
<td>1.74</td>
<td>3.7</td>
<td>64.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>73.9</strong></td>
<td><strong>11.7</strong></td>
<td><strong>8.66</strong></td>
<td><strong>8.2</strong></td>
<td><strong>721</strong></td>
</tr>
</tbody>
</table>


The state of the logistics infrastructure has a direct impact on the development of business. This is proved by the data on the distribution of the world’s leading countries in terms of the level of development of transport and logistics infrastructure (Logistics Performance Index (LPI index)), the level of business development (Ease of Doing Business (DB index)) and GDP in Fig. 9.

Comparison of the data on the development of the transport and logistics infrastructure and the level of development of conditions for carrying out business activities in the world's leading countries demonstrates a strong correlation between them. Fig. 9 also includes the information about the size of GDP of the group of countries selected on the basis of the level of development of business activities and transport and logistics infrastructure.

**Conclusion**

Thus, being considered at international level the logistics infrastructure and the transport and logistic services market directly affect the level of the countries' economic development. Expansion of the range of services, as well as use of modern warehouse, transport, information and communication systems create conditions for the development of entrepreneurship.

This study allowed providing a comprehensive assessment of the transport and logistics conditions for the development of entrepreneurship and can be used for examining the relationship between the development of transport and logistics infrastructure and the development of entrepreneurship. Analysis of the data on the conditions for doing business in different countries gives us grounds to conclude that they are related to the indicators of the state of the logistics infrastructure.

The final point to stress is that the state of transport and logistics infrastructure and the transport and logistic services market is the most important factor and driver of the development of entrepreneurship in the world's leading countries. Although being highly dynamic, the current rates of development of the transport and logistics infrastructure are not enough to meet the world's demand for the movement of goods. In the long term, the segment of integrated logistics solutions is likely to grow, triggered by companies’ desire to transfer non-core functions to third parties.

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References


Состояние мировой транспортно-логистической инфраструктуры и рынка транспортно-логистических услуг

П. Х. Азимов

Статья посвящена исследованию современного состояния объектов мировой транспортно-логистической инфраструктуры и рынка транспортно-логистических услуг. Уточняются содержание и структура объектов транспортно-логистической инфраструктуры. Проведен анализ основных тенденций развития транспортно-логистической инфраструктуры, железнодорожного транспорта, мировых контейнерных перевозок. Анализируется состояние мировой портовой инфраструктуры как части международной транспортно-логистической инфраструктуры. Представлена географическая и продуктовая структура мирового рынка транспортно-логистических услуг. Обоснованы причины, оказавшие влияние на изменение структуры мирового рынка транспортно-логистических услуг.

Ключевые слова: транспортно-логистическая инфраструктура; транспортно-логистические услуги; рынок; тенденции; мировая экономика.

Источники
1. Власов А. В., Диденко О. В. Проблемы развития таможенных услуг и транспортно-логистических систем в условиях глобализации мировой экономики (на примере стран таможенного союза) // Ученые записки Российской академии предпринимательства. 2014. № 40. С. 122−130.
5. Жаболенко М. В. Тенденции развития международного рынка транспортно-логистических систем в условиях глобализации мировой экономики // Вестник Донецкой академии автомобильного транспорта. 2015. № 3. С. 4−10.
6. Караев В. А. Глобализация рынка транспортных услуг и транспортно-логистических систем в мировой экономике: дис. ... канд. экон. наук. М., 2008.
7. Клименко В. В. Тенденции формирования логистической инфраструктуры транспортных узлов // Логистика и управление цепями поставок. 2012. № 2 (49). С. 57−64.
8. Кожина В. О. Глобализация транспортной системы в мировой экономике // Новая наука: опыт, традиции, инновации. 2016. № 4-1 (77). С. 83−86.
15. Харисова Г. М. Трансформация регионального экономического пространства на основе развития инфраструктурного комплекса: дис. ... д-ра экон. наук. Казань, 2012.


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