



Студенттер мен жас ғалымдардың  
**«ҒЫЛЫМ ЖӘНЕ БІЛІМ - 2018»**  
XIII Халықаралық ғылыми конференциясы

**СБОРНИК МАТЕРИАЛОВ**

XIII Международная научная конференция  
студентов и молодых ученых  
**«НАУКА И ОБРАЗОВАНИЕ - 2018»**

The XIII International Scientific Conference  
for Students and Young Scientists  
**«SCIENCE AND EDUCATION - 2018»**



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**INNOVATIVE DEVELOPMENT OF LOGISTICS IN THE RAILWAY TRANSPORT  
AND OPTIMAL PLANNING OF CARGO DELIVERY**

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Currently, one of the most optimal methods for the development of transport logistics is innovation, which is usually understood as the development and improvement of technological processes. In Kazakhstan, the development of these processes is much slower than in Western Europe and the United States. This is due to the fact that in recent years the development of transport logistics has taken the second place.

The creation of a simple and efficient rail transport model is now becoming a key element in the reform of rail transport. Insufficient investment attractiveness of rail transport negatively affects the rail transportation system as a whole and ultimately reduces the competitiveness of the entire economy. In view of the economic crisis, rail transport as a whole has shown negative results in recent years. There is a decline in both financial and operational indicators. At the same time, the country is implementing large-scale railway projects aimed at increasing the competitiveness of this industry. Income from transportation of goods, luggage and cargo in 2016 amounted to KZT 299,657.1 million or 86.4% compared to the same period of 2015. Revenues from passenger transportation in 2016 decreased to 39,320.2 million tenge (a decrease of 23.6% compared to the first half of 2015). In order to compete with other modes of transport, it is necessary to modernize the railway transportation system. The most effective example is the launch of high-speed routes. Reduction, acceleration and improvement of the quality of transportation lead to an increase in the mobility of the population and improvement of its living conditions.

The main task in the dissertation research is:

- to reveal the features of the development of rail transport as the most important infrastructure factor of modern economic growth;
- to analyze the current state and prospects for the development of the market of transportation services;
- to make rail transport more attractive for transportations;
- to propose innovative ideas for the development of railway transport.

The concept of "logistics" came from ancient Greece, where it meant "thinking, calculating and expediency." From the Greeks, this term passed to the Romans, who understood it as a "distribution of food". In Byzantium, logistics was considered to be a way of organizing the supply and management of the army.

In my opinion, logistics is partly a skill, partly theoretical knowledge and practical skills, as well as an intuitive approach to solving strategic problems and issues in the field of product promotion from supplier to consumer. Simply saying, logistics is the science and art of material flow management. Managing material flow means to perform the basic functions of management: planning, organization, motivation and control over its promotion. The process of product promotion causes various activities of institutions, firms and enterprises. Therefore, there are a lot of interpretations of the concept of logistics. For example, in the USA the definition of logistics, given in 1991 by the "Logistics Management Council", sounds as "Logistics is the process of planning, organizing and controlling the movement of material flows, their storage and storage, providing relevant information about all stages of their progress from the place of departure and to the destination in order to ensure a qualitative satisfaction of the client's requests."

At the moment, the state of the transport complex of Kazakhstan leaves much to be desired. To improve the current situation, it is necessary to introduce innovative ideas in the development of the transport component of the country.

Innovative logistics is aimed at improving the level of management through the application of various innovations aimed at improving the quality of customer service, increasing the efficiency of streaming processes and reducing the total cost of their implementation. Therefore, the object of investigation of innovative logistics is the formed stream processes which are the results of managerial measures applied to the activities of any public structures. The subject of innovative logistics is the forms and methods of managing the flow processes that are to be improved with the help of logistical innovations.

In my opinion, among the main tasks and functions of innovative logistics are the following:

- generation of new ideas in the field of managing streaming processes, especially strategic management, through the creative use of achievements in the natural and human sciences;
- study, generalization and use of the world experience of innovation in the field of logistics, taking into account the economic characteristics of different countries, regions, industries, spheres of activity, market structures, their capabilities and the degree to which they are in demand for logistics innovations;
- development of organizational, methodical methods of using logistics and innovative ideas in relation to these regions;
- evaluation of the effectiveness of innovative logistics activities and programs by comparing the utility, benefits and savings from their implementation with the production process.

Currently, the transport services market is actively developing. The introduction of more modern information technologies and telecommunication systems of information transfer in combination with logistics methods of cargo transportation management allows to carry out the optimal sequence of operations in the whole chain of cargo moving from producer to consumer in the shortest possible time. There are modern technologies of cargo transportation, demonstrating the possibilities of attracting transit cargo through Kazakhstan, assistance in reconstruction and modernization of the transport structure of the country with the involvement of native and foreign investments.

To improve the quality of logistics services of the Kazakhstani transport, it is necessary to plan the route network qualitatively and to optimize the selection of vehicles, which will minimize the time spent on transporting goods and reduce logistics costs. Realization of this direction in practice will undoubtedly affect the incomes of companies and determine their future.

One of the main tasks of any company engaged in the transport of goods is the establishment of information support. With the advent of GPS, GSM, WI-FI and other wireless ways of transferring information, it is not a big problem. Tracking the status and location of the cargo can now be done online, which allows to respond more quickly to difficulties and make decisions. In the future, innovations will affect the management system for maintenance and repair of rolling stock. In particular, in the event of a malfunction, its code will be automatically transferred to the office by mechanics, and those in turn can pass recommendations to the driver's smartphone to fix it. This technology opens up new opportunities for planning maintenance and spare parts. All diagnostic data can be obtained not on the return of the car from the voyage, but directly during its operation.

On the railway, at present, the problems are solved mainly by increasing production, building new lines or expanding existing ones, while the technical aspect is practically not affected. In fact, the problem can not be solved in a complex manner, but only locally and for a short period of time. Obviously, the costs of innovative transformation, in contrast to the constant capacity increase, are several times lower, and the efficiency from them is greater. There are a number of problems, such as depreciation of fixed assets, a long payback period and a lack of own funds, as a result of which an innovative strategy for the development of rail transport is difficult to apply.

Currently, the Internet has many suggestions for improving rail transport. Many of them can be used in Kazakhstan in the future. Many of these ideas will help me write my scientific dissertation.

## **1. LI-FI**

The new Li-Fi technology can soon replace Wi-Fi and become the future of mobile Internet. Li-Fi transmits data using a spectrum of visible light and many experts claim that this leads to lower costs and greater efficiency of traditional Wi-Fi. Li-Fi transmit data on the electromagnetic spectrum, that is, Li-Fi uses visible light, but while Wi-Fi uses radio waves. Since visible light is much more conducive to use than a radio spectrum, it can be assumed that Li-Fi can achieve much greater success and provide better service.

## **2. High-Speed and Hyper-Speed Rail**

In 2012, an American engineer Ilon Max announced his new project "Hyperloop". The idea of "Hyperloop" arose in response to the government's high-speed California High-Speed Rail project, which by 2029 should connect Los Angeles and San Francisco. The "high-speed" line assumes the movement of trains at a speed of over 322 km per hour, the cost of the project in the business plan published in April 2012 was estimated at \$ 68.4 billion. Hyperloop consists of an enlarged low-pressure pipe that contains pressure capsules, driven by several electric motors.

## **3. Intelligent Apps.**

In 2009, around 2.52 billion applications were downloaded in the world, this year it is expected that their number will reach 268.69 billion. At the moment, with the help of huge experience, it is possible to create applications to facilitate the lives of passengers. These applications use both historical data and real-time data to make predictions, decisions and provide choices for users. This new category of applications includes technologies such as virtual personal assistants, and has a clear link to the railway when it comes to booking tickets and organizing travel applications that will inform users of changes or delays in schedules.

To eliminate the negative phenomena of the Republic of Kazakhstan on the basis of the Decree of the President of the Republic of Kazakhstan dated April 11, 2006 No. 86 ("Kazakhstan Pravda" of April 13), No. 87 (25058), the Transport Strategy until 2015 is adopted. On the basis of this strategy, transit international traffic will be given to the Trans-Asian Railway, which determines the development of the Dostyk station on the Kazakh-Chinese border. To improve the quality of service on the railways, investment is needed, especially in the reconstruction of the track, new rolling stock, signaling and communication systems.

The processes of social convergence, the elimination of barriers between states unambiguously require the unification of European railways. Railway administrations and companies are taking steps towards the technical and technological harmonization of this mode of transport. From this point of view, the borders are less important than the issues of safe operation of the rolling stock of one railway on the lines of another. Existing national railways should become part of a single transport system, an element of a successfully functioning economy.

In the long term, the transport strategy envisages the realization of Kazakhstan's increased interest in further developing economic relations with all countries, the development of a transit transport system that promotes economic growth, and the country's geographical features in its competitive advantage. Despite the relative efficiency of shipping, the delivery of goods by land through Kazakhstan from Asia to Europe and vice versa turns out to be commercially more profitable. The full participation of railways with the standard gauge 1520 will increase the traffic and intensity of trade between the countries of the Asia-Pacific region (APR) and Europe. Further integration of the transport complex of Kazakhstan with the world transport system will increase its competitiveness in accordance with the growth of the state's economy

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