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**ВЕСТНИК**

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## **TO THE ISSUE OF INNOVATIVE DEVELOPMENT OF RAILWAY TRANSPORT IN KAZAKHSTAN**

**Abstract.** The article discusses the issues of innovative development of railway transport, based on the targets of the “State program of infrastructure development “Nurly Zhol” for 2015 - 2019” and “Development strategy of JSC “NC “KTZ” until 2025”. Innovative development of railway transport is determined through the current state of the company, which provide their innovative services in the industry. At the same time, it is known that in Kazakhstan its operator provides access to the main railway network, which is a natural monopolist of this industry in the person of National Company Kazakhstan Temirjoly JSC “NC “KTZ”.

Railway transport is functionally divided into two parts: the main activity is the transportation of passengers and baggage transportation, which is carried out through several leading specialized companies belonging to JSC “NC “KTZ” as: Passenger transportation JSC, Zholaushylartrans Company, JSC Suburban Transportation, JSC Passenger Leasing Carriage Company, JSC Passenger Leasing Carriage Company. Based on the activities of the companies noted, there was considered the innovative orientation of the strategy and tactics of railway transport development within the framework of a mixed natural-monopoly and market mechanism. The factors constraining innovation development are also described, and the conditions for improving innovation activity in railway transport are proposed.

**Key words:** innovations, innovative activity, innovative development, railway transport, state policy in the field of railway transport, national economy, railways, passenger transportation.

**Introduction.** Under the conditions of technological revolution and innovation development of Kazakhstan, companies of all sectors of the economy are striving to introduce and increase the volume of innovations in goods and services sold, which allows them to expand the market and increase the level of monopolism in their field and dictate their policies to customers and competitors. The orientation of the national economy to the innovative type of development required a clarification of priorities and a strategy for the development of the entire economic infrastructure, including the country's transport system. Due to the fact that in modern conditions of economic globalization, the role of transport in the world and national economies is significantly increasing, which is reflected in an increase in the degree of mutual influence of transport development and macroeconomic development, the development of other industries, transport must develop ahead of the industries it serves.

The effectiveness of the national economy, economic growth, the sustainability of the development of vertically integrated systems, territorial complexes and foreign economic activity is largely determined by the operation of railway transport. On the one hand, it reflects the level of development of the national economy and its competitiveness, and on the other hand, the level of economic security of the country.

**Main body.** In Kazakhstan rail transport is a backbone sector of the national economy with a developed infrastructure covering the entire territory of the state. The value of rail transport in Kazakhstan is very high. Kazakhstan railways provide 68% of the total freight turnover and over 57% of the country's passenger traffic. The length of railways in Kazakhstan exceeds 13.7 thousand km., 16 butt points (11 with Russia, 2 with Uzbekistan, 1 with Kyrgyzstan, 2 with China) connect the railway system of Kazakhstan with neighboring states. The railway of Kazakhstan directly borders and interacts with the railways of

Russia, Uzbekistan, Kyrgyzstan, Azerbaijan and China, which is one of its main advantages in the transport services market. The railway systems of Russia and Kazakhstan are extremely interdependent. Railways connecting Russia, European countries, countries of Central Asia and the Middle East run across the country [1].

Innovative development of railway transport is determined through the current state of the company, which provide their services in the industry. In Kazakhstan, access to the main railway network is provided by its operator, represented by National Company Kazakhstan Temirzholy JSC "NC "KTZ", which is a natural monopolist, whose tariffs are regulated by the Agency of the Republic of Kazakhstan on Regulation of Natural Monopolies.

In the passenger sector, competition and increased participation of the private sector are ensured through franchising and access to passenger rolling stock of state and independent carriers. For these purposes a significant amount of financial resources is allocated annually to the state. The main objectives of the reform in this sector of the railway industry are: financial and organizational separation of passenger and freight traffic, achieving transparency of financial flows, reducing losses, strengthening the role of the private sector and introducing competition in the process of organizing passenger traffic.

On a functional basis, passenger transportation is divided into two blocks: the main activity is the transportation of passengers and baggage transportation, which provides activities such as repair and maintenance of railcars, passenger service at railway stations, restaurant cars, laundry services and others. The firm has created several specialized companies.

The national passenger carrier JSC Passenger Transportation is a subholding company of JSC "NC "KTZ" and, together with its subsidiaries and affiliates, ensures the process of transporting passengers. It was originally planned that JSC Passenger Transportation will operate as a carrier in international and interregional communications, retaining only those routes that were not received by private carriers in interregional communications. However, practice has shown that such a mass transfer of routes from the state carrier to the private ones did not occur. Therefore, as the main activity of JSC Passenger Transportation was restructured, the following activities were carried out with the formation of legal entities engaged in relevant activities: a second carrier, Zholaushylirtrans LLP, was established to encourage competition, which participates in tenders for the right to provide passenger transportation services between and intraregional routes. In the future, as originally planned, this company was to be transferred to the private sector.

JSC Suburban Transportation was organized for the transport of passengers, mainly for medium-distance distances in a suburban or intercity zone within the same area. This company participates in tenders held by Akimats and cases when private carriers have not expressed a desire to carry out transportation; Responsibility for organizing long-distance and domestic traffic within one region is transferred to local executive bodies, which also transfer this right on the basis of franchising to regional private companies; To reduce entry barriers to the passenger transportation market, a company called Passenger Leasing Wagon Company was established, which provides maintenance, maintenance and repair of passenger cars transferred from Passenger Transportation, as well as leasing them to private carriers wishing to enter the market through franchise system. The restructuring of the auxiliary activity of the passenger economy was also carried out. In particular, work on the overhaul and maintenance of cars transferred to the private sector to serve carriers on a contractual basis. Works on current maintenance and uncoupling repairs en route, which for technological reasons cannot be transferred to the competitive sector, as they are carried out on main routes, are transferred to Vagon Service JSC; on the basis of buildings of railway stations for the provision of service to passengers organized by JSC "Station Service", etc. [2].

Targets and forms of innovative development of the companies described above are determined by the "Transport Strategy of the Republic of Kazakhstan up to 2020", "The State Infrastructure Development Program "Nurly Zhol" for 2015–2019" and the "Development Strategy of JSC "NC "KTZ" until 2025", where the following [3-5]:

- formation of a single economic market through the integration of the country's macroregions on the basis of building an effective infrastructure - ensuring security at railway transport facilities;
- implementation of anti-crisis measures to support individual sectors of the economy in the context of deteriorating conditions on foreign markets;

- development of scientific research in the field of railway transport, including those financed at the expense of JSC "NC "KTZ";
- modernization and development of infrastructure for the elimination of restrictions and “bottle-necks” in the capacity of the railway network, the expansion of the railway network, the reconstruction and construction of new artificial structures (tunnels and bridges);
- development of high-speed and high-speed rail traffic, as well as heavy traffic;
- the renewal of railway rolling stock, the development of an industrial complex supplying products for railway transport, the creation of high-tech and high-tech samples of railway equipment;
- integration of the transport system of Kazakhstan into the world transport system by increasing the level of development of transport infrastructure, the competitiveness of domestic carriers in the foreign market of transport services, as well as the efficiency of using the transit potential;
- strengthening the single economic space and the development of interregional relations, as well as ensuring transport accessibility at a level that guarantees social stability through the development and improvement of the efficiency of use of transport infrastructure;
- ensuring environmental safety and rational use of energy resources through the implementation of a targeted state policy in establishing environmental standards that meet international standards, and monitoring their implementation.

The marked directions are based on the innovative orientation of the strategy and tactics of railway transport development within the framework of a mixed natural-monopoly and market mechanism. The implementation of such large-scale tasks requires the solution of a number of large scientific and technical problems that provide the technological foundation of the industry, respectively, the issues of innovative development of railway transport are actualized at all levels of public-private partnership in transport.

In the current situation, the above-mentioned areas of innovation development are implemented mainly in the framework of JSC "NC "KTZ". In this case, it is necessary for the company to form an innovation management system that ensures the full cycle of innovation projects implementation - from defining strategic directions and target development parameters to obtaining new products and evaluating their performance, as well as introducing a corporate innovation management system, defining innovation development indicators, which will be used as key performance indicators.

However, it should be noted the factors constraining the innovative development of JSC "NC "KTZ". First, the high depreciation of the company's fixed assets and a significant amount of obsolete equipment cause a lag in technical development compared to the railways of the Russian Federation and China. Secondly, territorial disproportions in the development of railway transport infrastructure, regional transport capacity and capacity development of railway lines, the underdevelopment of the system of providing additional services in demand in many types of business have a negative impact on maintaining and increasing the share of the transport market both in the national market and in development and expanding its presence abroad. In this regard, such phenomena as a discrepancy between the structure of the car fleet and changes in the structure of cargo traffic under conditions of growing share of high-tech goods and container traffic, while reducing the share of raw materials transport, as well as discrepancy between the level of development of railway infrastructure, international transport corridors and changes in direction and traffic intensity, noted by domestic researchers significantly exacerbate the risk of reducing the competitiveness of railway transport due to the technical and technological lag behind other types of transport and the world level of development of transport systems.

Third, the system of innovative development of railway transport in an integrated company with a single legal entity required the development of a mechanism to combine the vertically integrated budgeting of railway costs and a motivated system for managing innovative development of enterprises taking into account regional features of branches - structural divisions of JSC "NC "KTZ". As a result, the innovation management system of railway transport became complicated due to the lack of innovative developments and “breakthrough” scientific and technical solutions. At the same time, the innovative activity of the industry is provided not only and not so much by science, as by the state of its engineering system, which develops innovations, ensures rapid updating and high-quality improvement of the material and technical base, increasing its scientific and technical potential.



Fourth, the state policy in the field of railway transport has not achieved the set results on improving the quality of services provided to the population, updating the main assets of the industry and effective interaction between the public and private sectors: carriers are discouraged by the principle of state subsidies, covering only their losses of minimum profitability; subsidies cover only half of all losses, the practice of cross-subsidization of passenger traffic at the expense of freight remains; according to experts, the unmet demand for transportation by the population is about 4 million people per year, which requires first of all the solution of the issue of carriage deficit, which carriers are not able to solve at their own expense; there are no incentives - in the form of long-term contracts, the necessary profitability of activities or benefits for lending to financial institutions.

Fifth, contracts for the organization of passenger transportation are concluded for a rather short period - 1 year with the possibility of extension to 3 years, which in such a capital-intensive industry as railway transport is clearly not enough to implement the minimum plans for carriers to achieve a profitable level of service and implement long-term programs; Passengers' interests are not a priority in contracts with carriers, since their monitoring is ensured according to aggregated indicators of carriers' activity - the frequency of trains running and the average number of cars in trains, there are no important indicators for users, such as safety, accuracy of timetable, reliability and comfort shipments; the level of competition for the right to provide passenger transportation in Kazakhstan can be significantly reduced with stricter requirements for the presence of its own fleet of cars, and subsequently locomotives.

An important problem requiring its actual solution is the creation of institutional conditions for the development of innovative activities of companies, the formation of a culture of innovative thinking and competencies of specialists capable of ensuring dynamic growth and innovative development of enterprises in the industry.

These circumstances determine the search for such mechanisms and structures that, on the one hand, would enhance the investment attractiveness of railway transport, and on the other hand, create conditions for the continuous generation and diffusion of innovations in the industry, involving a significant number of participants in the innovation development processes. Given the strategic nature of the development of rail transport for the national economy, the country's defense and security, such a mechanism should be implemented in the public-private partnership system in the field of innovative development of rail transport.

Further ambitious business development plans based on public-private sector cooperation may become unfulfilled, unless there are fundamental changes in the resolution of these problematic issues. Taking into account that the significant role of the railway industry in the socio-economic development of the country will continue in the medium and long term, the scientific substantiation of decisions taken in the industry is particularly necessary, both in current activities and in research on the subject of innovation, the introduction of advanced foreign and domestic experience.

Thus, according to the authors, an important area of innovation development is the formation of a system of innovation activity, within the framework of which the integration of the innovation sphere with the railway transport infrastructure is ensured on the principles of self-organization. Such intrasystem integration is based on innovative, horizontal-vertical, network infrastructure integration, network electronic integration, integration of various fields and activities of railway transport enterprises.

According to the authors, the following conditions are necessary to improve innovation development in rail transport:

- the presence of a developed methodology for managing innovative development, including the general and particular methodological principles of innovation management that take into account the interests of all stakeholders (the state, JSC "NC "KTZ" and other railway enterprises, consumers), as well as developed and updated methodological tools of innovation management in railway transport, taking into account the priority directions of innovative development of the country's economy and tional transport system;
- formation of the mechanism of interrelation and interaction of the management system of railway transport enterprises with the innovation market, the investment and financial markets, the transport services market;

- formation of the innovation management system for the integrated development and implementation of the innovation potential. Such a control system should include a set of interrelated and interacting incoming subsystems: an innovation system; system of formation of investment attractiveness of innovative investment objects; portfolio management system of innovative projects and programs; network infrastructure innovation; public-private partnership in the field of innovation regulation. The interaction of the marked subsystems is the basis of the organizational and institutional mechanism for activating and developing the innovation potential, the innovation and market infrastructure, and the market instruments that enable the commercialization of innovations. The formation of such a system is designed to ensure the creation of conditions for the continuous generation and diffusion of innovations, the formation of a synergistic mechanism of the multiplicative process of innovation development.

**Conclusion.** Summing up, it should be noted that the transition of the national economy to the innovative path of development, the ongoing processes of corporate transformation in the railway transport are actualizing the problem of innovative development. The most important direction of the innovation development of railway transport enterprises is the formation of a system of innovation activity, within which the synergetic development mechanism can be realized in the logic of “demand for innovation - investment in intellectual capital - increase in profitability of transport due to the application of innovative technologies - accumulation of intellectual capital - development of competition in the innovation market due to the additional demand for innovation”. The necessary conditions for the implementation of such a mechanism are the existence of a developed methodology for managing innovative development, the formation of a mechanism of interconnection and interaction of the management system of railway transport enterprises with the innovation market, the investment and financial markets, the transport services market, and the formation of an innovation management system for railway enterprises.

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### **ҚАЗАҚСТАНДАҒЫ ТЕМІРЖОЛ КӨЛІГІНІҢ ИННОВАЦИЯЛЫҚ ДАМУЫ ТУРАЛЫ СҰРАҚҚА**

**Аннотация.** Мақалада «Нұрлы жол» инфрақұрылымдық дамытудың 2015-2019 жылдарға арналған мемлекеттік бағдарламасы» және «ҚТЖ» ҰК АҚ-ның 2025 жылға дейінгі даму Стратегиясындағы мақсатты бағыттарына негізделген темір жол көлігін инновациялық дамыту мәселелері қарастырылған. Темір жол көлігінің инновациялық дамуы осы салада өзінің инновациялық қызметтерін көрсететін компаниялардың ағымдағы жағдайы арқылы айқындалады. Сонымен қатар, Қазақстанда магистральдық темір жол желісін қамтамасыз ететін және оның тек жалғыз ғана операторы болып табылатын осы саланың табиғи монополисті «Қазақстан темір жолы» Ұлттық компаниясы» АҚ - «Қазақстан темір жолы» ҰК» АҚ екені белгілі.

Темір жол көлігі функционалдық белгісі бойынша жолаушылар тасымалы белгісі бойынша екі блоктан тұрады: негізгі қызметі - жолаушылар тасымалдау және жүк тасымалы және оларды жүзеге асыратын «ҚТЖ» ҰК АҚ құрамына кіретін бірнеше жетекші маманданған келесі компаниялар жүргізеді «Жолаушылар тасымалы» АҚ, «Жолаушылартранс» Компаниясы» АҚ, «Қала маңы тасымалы» АҚ, «Жолаушылар лизингтік вагон компаниясы» АҚ. Аталған компаниялардың қызметтері негізінде теміржол көлігі инновациялық бағыты стратегиясы мен тактикасын дамыту аясында аралас табиғи монополиялық және нарықтық механизм қарастырылған. Сондай-ақ, инновациялық дамуды тежейтін факторлармен темір жол көлігінің инновациялық қызметін жетілдіру бойынша шарттар ұсынылған.

**Түйін сөздер:** инновациялар, инновациялық қызмет, инновациялық даму, теміржол көлігі, теміржол көлігі аясындағы мемлекеттік саясат, ұлттық экономика, теміржол жолдары, жолаушылар тасымалы.

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### К ВОПРОСУ ОБ ИННОВАЦИОННОМ РАЗВИТИИ ЖЕЛЕЗНОДОРОЖНОГО ТРАНСПОРТА КАЗАХСТАНА

**Аннотация.** В статье рассмотрены вопросы инновационного развития железнодорожного транспорта, основанные на целевых ориентирах «Государственной программы инфраструктурного развития «Нұрлы жол» на 2015-2019 годы» и «Стратегии развития АО «НК КТЖ» до 2025 года». Инновационное развитие железнодорожного транспорта определяется через текущее состояние компании, которые оказывают свои инновационные услуги в данной отрасли. При этом известно, что в Казахстане доступ к магистральной железнодорожной сети обеспечивается ее оператором, являющееся естественным монополистом данной отрасли в лице АО «Национальная компания «Қазақстан теміржолы» - «НК «ҚТЖ»

Железнодорожный транспорта по функциональному признаку пассажирские перевозки разделен на два блока: основная деятельность – перевозка пассажиров и багажные перевозки, которое осуществляется через несколько ведущих профильных компаний, входящих АО «НК «ҚТЖ» как: АО «Пассажирские перевозки», ТОО «Компания «Жолаушылартранс», АО «Пригородные перевозки», АО «Пассажирская лизинговая вагонная компания», АО «Пассажирская лизинговая вагонная компания». На основе деятельности отмеченных компании рассмотрена инновационная направленность стратегии и тактики развития железнодорожного транспорта в рамках смешанного естественно-монопольного и рыночного механизма. Также описаны факторы, сдерживающие инновационное развитие и предложены условия для совершенствования инновационной деятельности в железнодорожном транспорте.

**Ключевые слова:** инновации, инновационная деятельность, инновационное развитие, железнодорожный транспорт, государственная политика в области железнодорожного транспорта, национальная экономика, железные дороги, пассажирские перевозки.

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