FREIGHT RAIL CAR FLEET: ANALYSIS OF CONDITION AND PROSPECTS

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ABSTRACT

The article deals with main results of the restructuring of railways in Russian Federation, analyzes dynamics of performance of rail operations under the impact of relevant factors, international (European and North American) models of organization of freight rail transportation, Russian experience, possible guidelines for enhancement of business processes referring to management of freight rail car fleet.

The author's conclusion is that holding company Russian Railways has acquired a huge regulative basis and numerous technical and technological tools to organize efficient transportation process that provides for the requirements of all the actors within the country as well as in the world transportation and logistics market. Meanwhile it is necessary to create effective technological logistics within the market of freight rail transportation provided the conditions of existence of multiple owners of rolling stock and limited infrastructure capacity of the JSC Russian Railways.

Keywords: railway, freight car fleet, privatization, productivity, idle hours, empty runs, management, technology, logistics.

Background. *Railways in the Russian Federation have been subject to numerous changes and restructuring, that required new technological solutions from the organization point of view, as well as from the quality aspect. Just after rejecting "planned" economics organization of transportation in the country was incapable to enter competitive market. Absence of customer focus from behalf of enormous state run railways caused not only the reduction in volume of transported goods, but also a transfer of a considerable part of freight flows to alternative modes of transportation. So the decision of the Government of the Russian Federation on the reforming of railways was not only necessary, but also very timely though there was no evident vector of development, that should have already proved to be correct at the time of creating competitive environment in all sectors of national economics.*

Finally, the JSC Russian Railways has become more customer focused company, new possibilities have been found to join international integration processes, to organize HSR, to enhance quality of service to forwarding companies and individual passengers. Now the holding company Russian Railways is one of most promising and strongest actors within Russian transportation market and within global market as well.

As the main objective of the company is to satisfy the demand of the population and of the industry for transportation service efficiently, to maximum extent and in economically beneficial way, then the future of the company depends first of all on the model of management of freight rail car fleet. The reform's most important aspect was to ensure the renewing of rolling stock at the account of private companies.

So the reform of the railway in Russia foresaw the transfer of the rail car fleet to private owners, and the change of the owners of freight rail car fleet resulted in the change of management system. At the same time the reform of railway in Russia together with many positive effects has got some negative ones. By 2007 all the fleet of freight rail cars within the network of Russian Railways had become private, and after that the company got financial losses, the operation performances indicators took a turn for the worth. Thus the rate of there-and-back operations decreased from 1,2 in 2007 to 1,04 in 2013. Almost all freight cars were used for forward route only, the level of routing and scheduling also reduced considerably.

In the context of fully private fleet the work of marshalling yards has changed. If previously the largest of them could form daily trains that moved 3–5 thousand kilometers without processing, then now significantly more infrastructure resources are required now for formation of trains for such a long distance at service stations.

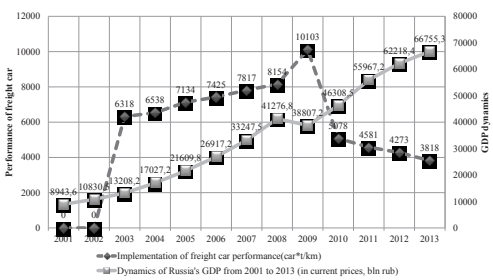
Organization of traffic using existing technology has not just increased the load on station infrastructure, loading sorting yards with unnecessary processing forced them to work in the super intensive mode. The number of uncouplings at major stations, compared with 1988 (the year 1988 was the year of maximum traffic on the railway network of the USSR) increased repeatedly. Labor intensity of shunting masters, station duty officers and technical office workers increased significantly.

If earlier one marshalling track was required to make up the trains and to prepare empty cars to be transported to the station of origin, now empty cars are selected not only by their intended purpose, but also by the owners, so accumulated on two or more tracks. As a consequence load of infrastructure, facilities and personnel increases, because of the growth of not only the volume of station work, but also of the size of motion on hauls. For this reason, train dispatchers work in more intensive mode.

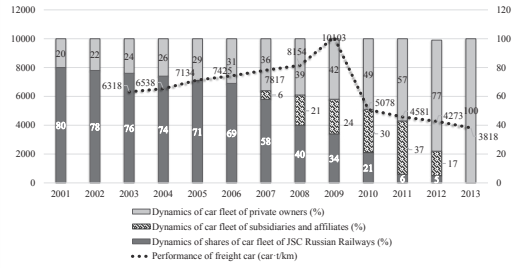
Objective. *The objective of the author is to consider crucial problems concerning freight car management in Russia.*

Methods. *The author uses general scientific methods, graph construction, analytical approach, evaluation method.*

Results. *Considering the main indicators of railways and the country's economic development from 2001 to the present time, we can see that there are no prerequisites to a reduction in traffic on freight transport and logistics market, rather the opposite: the last years underdevelopment of infrastructure and loss of control (maneuverability) by freight car fleet does not allow the country's economy to grow fully. Along with a lot of enlisted problems every day has grown the problem of increasing empty run of cars. The indicator affected the main indicator of fleet operation which is freight car performance. The index is comprehensive and*



Pic. 1. Comparison of freight car performance with the main indicator of economic development of Russia.



Pic. 2. Dependence of freight car performance on ownership structure of the rolling stock.

demonstrates the effectiveness of both JSC Russian Railways and private operating companies, and loading of the entire rail system (Pic. 1).

Analysis of the dynamics of freight car productivity shows that with ever-increasing operating fleet, the quality of operation of mobile units is not improving: for example, completely private car fleet clearly reduces average speed of freight delivery.

Performance of car of total fleet reached its highest levels in 1988, and only in 2000 the industry was able to get close to this value. Moreover, the average length of transportation in record year was significantly smaller, traffic volume was greater and the weight load on a car was by 8–9% lower.

Analyzing the performance index of the car within the network of JSC Russian Railways from the perspective of ownership structure of the rolling stock, it can be seen that the most efficient use of the mobile unit was observed when the ratio of the number of cars of private owners, subsidiaries and affiliates and JSC Russian Railways was 42, 24 and 34% respectively (Pic. 2). This fact is the best illustration of how important it is to have a part of cars under the management of JSC Russian Railways in the framework of the technology of balance adjustment and resource-limited infrastructure.

In recent years, the principles of car fleet management were systematically addressed at various levels from federal to sectoral and linear.

Best so far the technology of transportation process management, built on balance sheet method, was created for the environment characterized by a limited infrastructure, repeatedly increasing volume of loading, lack of traction resources and, importantly, improvements in the use of human resources. Besides Russian model there are still two alternative models of organizing transportation of goods by rail.

The European model provides for non-discriminatory access to infrastructure, allowing the purchase of «schedule thread». Historically, the European rail network was not economically necessary, the availability of alternative transport corridors, served by both water and road transport, always provided shippers with a choice of several options for delivery. When creating a single market for rail transportation the European Union laid down the condition of railway infrastructure provision for its carriers. For example, in Germany there is no concept of competition among German carriers, all the main competitors are from other countries, which carry only 29% of federal cargo transportation.

The American model of organization of transportation process historically was formed with the support of the state and has two important benefits: stimulating private companies by the state (provision of soft loans, the lack of state regulation of prices of service), as well as a lower net cost of transportation. Extensive network of railways of the country impresses with its volume, and is represented by several companies-owners. Due to the peculiarities of the US economy development, the absence during over 30 years of significant economic shocks, railway infrastructure (not only track and track facilities, and traffic control systems, car fleet) has become developed and well managed system with unregulated tariffs and properly operating laws of the market. In the US there is a system of consolidation of the rolling stock, similar to the concept of Soviet cooperative, that is governed by Railway Association of North America, which creates conditions for uniting of different owners into the pool. Here we are not talking about any non-discriminatory access, as the owner of each track is one or another railway, and only with its consent any movement of car flow is possible.

The history of the world transport network, including in the field of railway transport, proves that in a constantly evolving market environment transportation organization should focus on making a profit. For example, a large North American railway company TTX (due to the consolidation of the rolling stock) offers delivery of goods by sea and rail, bypassing the Euro-Asian railway system, and at the same time firmly believes in the profitability of the route. For us, this is an example-antipode: with the existing car fleet management technology Russia will not be able to fully integrate into the international transport system.

Situation of rail freight transportation in Russia was complicated by the fact that by the beginning of 2014 the legal relationship between the carrier on the railway and train operators had not been stipulated in any law, there were no clear rules of interaction, technology of work in the changed circumstances remained fuzzy. The situation forced the carrier to seek methods of external freight car fleet management. Operator company relied on primitive principle of «the most advantageous transportation», increased its cost, and most importantly – the transport component of every cargo, including socially significant. In view of «freezing» of tariffs it had a very negative effect on JSC Russian Railways, often railways had to work at a loss.

The technology of work of operating companies did not consider the bandwidth of mainline and station infrastructure and load factors of other facilities. The principle of work of private owners was focused on making a profit from one car and industrial holding was not able to make allowances for operation of a freight car with the technology of balance adjustment, so that neither the operator nor the JSC Russian Railways were able without any tool to reduce the transport component in the price of goods transported by rail.

An attempt to effectively manage freight car fleet in 2014 was associated with creation of a consolidated fleet of more than 90000 gondolas of JSC Federal freight Company.. Decree № 529r «On approval of the standard form of contract for provision of services to optimize logistic schemes of transportation of cars» as the subject of the contract between JSC Russian Railways and JSC Federal freight Company. establishes, in fact, the right to use the balance method of management of empty cars.

The management system of consolidated fleet provides inclusion in the operational management of cars, not only of JSC Federal Freight Company, but of other owners who would have signed a contract with JSC Russian Railways. Evaluation of the new form of work in the first 9 months of 2014 showed that turnover of cars of consolidated fleet was reduced by 8,5% – to 15,1 days, the performance of the car increased by 18% – to 9457 t.km net, speed of delivery of empty cars – from 195 to 283 km/day (increase by 45%). Innovation has brought significant technological advantage, but unfortunately by the end of 2014 was suspended for economic reasons on the part of JSC Federal freight Company.

A new regulatory instrument came into effect in 2015 that will improve the technology of railway work in freight

transportation: Federal Law № 503-FZ «On Amendments to the Federal Law «Charter of Railway Transport of the Russian Federation» and Article 2 of the Federal Law of 10.01.2003 № 17-FZ «On Railway Transport in the Russian Federation». It establishes the legal regulation of interaction between participants of the transportation process in the organization of traffic within the infrastructure of JSC Russian Railways. Thus, particularly the fares for rail infrastructure for transportation and besides transportation were established, as well as fares for placing rolling stock on public railway, those fares being cited in tariff guidelines. The obligation of cars' owner (or of recipient of goods on the instruction of cars' owner) was formulated to take empty cars away from public ways, a procedure of transporting of empty freight cars which do not belong to carrier was established as well as a procedure of interaction during placing of such cars for loading. Definitions of the operator of railway rolling stock, containers are introduced.

Instead of conclusions

The organization of rail transport operations in the Russian Federation has been considerably changed during the way of passing from "plan" economics to free market of service and goods. The reform of railways regardless of some negative effects has on the whole positive results and created very timely possibility to develop the railway sector. As far as freight transportation is concerned, most important decisions were:

– separation of the functions of public administration from the functions of economic management within the railways that simultaneously allowed to detach competitive types of activities from monopoly structure;

– maintaining of a single public network infrastructure of railways and of centralized dispatching system;

– stage-by-stage renouncement to cross subsidizing between freight and passenger, national and exportation-importation operations;

– amelioration of tariff policy;

– detachment from the activities of federal railways of social and other structures (with the exception for closely linked to operations) in order to reduce nonproductive costs.

Implementation of measures to improve the technological chain of goods delivery will, of course, increase the investment attractiveness of rail transport, would enable it to enter more confidently the world market of transport and logistics services.

Holding company Russian Railways today has a sufficient regulatory framework and a variety of technical and technological tools for effective transportation process. However, it is necessary to perform tasks such as creating a viable technology logistics at the market of rail freight transportation taking into account a multiplicity of owners of rolling stock and the limited infrastructure of JSC Russian Railways.

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