

LOGISTICS MANAGEMENT BY RAILWAY TRANSPORTATION OF PASSENGERS

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Railway transport makes special the fact that this industry is technologically limited compared to its competitors. And it means that the number of infrastructure operators is limited (there is only one infrastructure operator [1] in Ukraine – Public Joint Stock Company «Ukrainian Railway»), and the logistics railway industry management should be prudent. The railway operator's freedom to use railroads is limited by the presence of rolling stock, capacity, contracts or regulatory functions of the government, as well as technical characteristics, road density and track width used by telecommunication and signaling systems, train control systems [2].

The main difference between railway systems and other transport systems is who they belong to and how they are organized, what is the government's influence on their regulation. An infrastructure operator in railway transport is a state-owned company, since all shares belong to the state in Ukraine. All this challenges the transition to logistics management technologies. According to the world experience, logistics methods are most effective with the several transport types in the moving passengers process. On the modern communication systems basis, it makes sense to create logistics systems that cover the entire passenger traffic chain with the most effective connections between the points of their origin and repayment. This approach can lead to material movement optimization and information flows depending on the situation in the markets and the permanent provision of transport economic competitiveness enterprises in the passenger transportation field.

One of the initial stages in the logistics technologies implementation in rail transport should be the re-equipment of the electronic logistic system for rail tickets reservation, the information creation and computer logistics center, which will increase the receiving electronic lines capacity for tickets reservation, including in emergency situations. For example, in order to attract customers to the United States, Amtrak reduced the price of tickets sold through the Internet, conducted an online ticket sale to fill empty seats in low-traffic trains (discounts reached 88%), the Internet sale did not touch routes that were very popular [2]. The tickets sale allowed to attract Americans to the railways and find in them an alternative to traveling by car or plane.

New logistics ways to attract passengers to their ultra-high-speed Acela trains are used by the leadership of the American railway company. To entertain passengers in high-speed express trains, railwaymen began to invite popular sports, television, cinema stars, organize national cuisines days or wine tastings. Improving the ticket sales system is of primary importance for the logistics development. So in Italy, they introduced the

electronic ticket sales form, when the passenger receives a message on the smartphone containing the identification number, train number and information about the trip. Thus, to make a trip on the train, the passenger should present his identification number to the conductor and, for the account, if necessary, the conductor issues a paper ticket to the passenger. Also, when selling tickets, they use identification based on radio frequency technology, which allows them to scan travel documents without stopping the passenger for their presentation, passing through a checkpoint equipped with a sensor [2]. All of the above is used with a single primary goal - to strengthen the importance of the passenger (the buyer of the company's services). The next stage in the logistics management improvement can be the creation and a virtual agent implementation, which informs by phone about the trains schedule, their arrival and departure, makes ticket reservations, and increases passenger satisfaction by 45%, and more clients receive all the necessary information from it. In spite of the information availability on the trains timetable on the Internet, some reference groups are still needed for some categories of the population. Earlier, a toned reference system was used, which was found to be ineffective. This software product pays for 1-1,5 years, allowing not to hire a whole agents team. Thus, this logistics technology automates the work of the reference service.

Increase the rail transport competitiveness allows the high-quality food organization during the trip. Especially it concerns the business segment, passengers who consider food on the way as a time saving factor. And this significantly enhances the railways image. The first attempts to introduce logistics in the mixed passenger traffic field in North America were undertaken by air and rail transport companies, developing a strategy for such transportation [2].

For the combined several transport modes links in Ukraine at this transport development stage, it is also characteristic that they are not integrated technologically into an intermodal system with a single travel document. Before boarding a train, a passenger needs to exchange a ticket, for example, an airline to a railway ticket. On the railways and in air transport companies – different technologies that are not agreed for specific cases of moving passengers in a mixed transportations. But some railroad transportation companies in Europe practice recognizing the airline company ticket as a travel document on the train, provided that the passenger moves in a mixed traffic. This stage can be regarded as the initial stage in the construction of an intermodal system.

Speed and high-speed railways are becoming more common in the world. The analysis of the transport services market showed that high-speed rail services have a leading role, the trip duration does not exceed 2 hours, but in some cases the railways retain their positions in the market and with a trip time of about 3 hours. Transportation logistics research has shown that air (competitive at distances of 1000 km) and rail transport (competitive at distances from 500 km to 1000 km) often cooperate with each other (as if complementing each other). This desire is due to the fact that by combining different transport modes. It is possible to provide passengers with the opportunity to travel with more comfort than any of them individually.

SEARCHING FOR CRITERIA USED IN TAKING RAILWAY INFRASTRUCTURE MAINTENANCE DECISIONS

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Safety management systems are perceived in Polish railway entities most often as a source of additional bureaucratic burdens that do not bring any added value. However, this is not at all a characteristic only for Polish railways. The authors of works published in the special issue of the prestigious Safety Science journal, devoted to fundamental issues of safety engineering, pointed out a similar phenomenon. They admitted that the scientific ideas developed in good faith contribute, after being imposed by legal acts, to the decline in the importance of practical knowledge and the over-representation of various types of consulting companies [1, 2].

Paradoxically, the not-so-precise implementation of safety management systems in Polish railway entities has meant that many decisions are still made on the basis of many years of experience, and not – under the dictation of procedures written by employees of consulting companies. This is particularly evident in entities with a more extensive structure, in which the employees use instructions developed in the times of uniform Polish State Railways. Therefore, the scientific community has a chance to propose such changes in safety management systems that will be both substantively correct and possible to apply in real working conditions.

In July 2017, a group of ten experts, employees of one of the Regional Branches of the Railway National Safety Authority, was consulted. During the meeting, experts were introduced to the basic information on the way the decisions on railway infrastructure maintenance could be made. A set of example criteria was also proposed and shortly discussed to get the common understanding of the issue. Then, a discussion began on the answer to the question – what criteria are taken or could be taken into account when selecting maintenance works to be carried out and to be translated into the next year?

In the course of the discussion, a set of four criteria was developed that could be used to determine the order of performance of maintenance activities in the absence of funds for performing all planned works:

Speed limit. This criterion is an indirect indicator of the technical condition of a given fragment of the railway network, as well as its importance in the scale of the entire railway network. In the words of experts, there are hardly any situations on the high-speed lines when the diagnostic recommendations are not carried out immediately. This