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METHODOLOGY FOR ASSESSING THE LEVEL OF TRAIN SAFETY

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Abstract. The results of the analysis of the existing methods of train safety management show that these methods are not enough to solve the issues of economic traffic safety management. This means that there is a need to develop a methodology to improve the efficiency of traffic safety management. This article presents a newly developed new methodology for assessing the level of safety of train traffic, in which the formula for determining the level of safety of cargo transportation is developed taking into account the

correction factor, taking into account the number of crashes, accidents, defects in operation and other incidents, the standard of the level of safety of vehicles and the severity of individual cases of safety violations.

Keywords: Train safety, wrecks, accidents, accidents at work, the level of safety.

Introduction. Railway transport is considered the basis of modern economy and serves as an object of market relations. Effective organization of its activity is related to the operation and development of all sectors of the economy, their associations and complexes. Despite the fact that they make a great contribution to the economy of our country, until today there are certain violations of train traffic safety in railway transport.

Traffic safety is the protection of the transport system from traffic disturbances that harm passengers, shippers, the external environment and the transport system itself (accidents, collisions, stoppages due to malfunctions, wrong-way traffic, etc.) protection status is understood.

The state of the risk, which is determined depending on the probability of the occurrence of the risk and its possible consequences, is the level of risk. Normative legal documents related to ensuring the safety of cargo and passenger transportation on railways, maintenance,

- legality;
- security;
- environmental cleanliness;
- being able to use transport services;
- openness and transparency.

The object of research is subjects operating in the field of railway transport, which carry out cargo transportation. The subject of research is the method of evaluating the level of safety of train traffic as an indicator of the quality of transportation service. The purpose of the research is to manage the quality of the transport service and to prevent accidents, accidents and incidents by creating an opportunity to comprehensively objectively assess the level of its safety. The objectives of the study are to assess the

service, repair and use of railway equipment and technical means in motion, and normative documents in the field of technical regulation and the set of criteria that allows to assess the risk of non-fulfillment or incomplete fulfillment of the requirements and then categorize the stations or departments of the enterprise according to the level of risk constitutes the criteria of the level of risk.

According to modern scientific and practical ideas, road safety of any product is one of the most important indicators of its quality.

The goals of ensuring transport safety are the stable and safe operation of the transport complex, the protection of the interests of individuals, society and the state in the field of the transport complex from illegal interference.

of the Law of the Republic of Uzbekistan "On Transport".

Article 5 contains the main principles of transport activities, which are as follows [7]:

quality of the service provided by the railway transport to consignees and consignors and to improve the safety of cargo transportation.

Literature analysis and methods. In the course of research conducted in the world, a number of scientific works on safe and efficient organization of shunting operations at the station, safe and timely delivery of goods and passengers to their destinations by introducing a comprehensive assessment system of the condition of the railway infrastructure have

been performed [1-7], but not enough scientific work has been carried out on the methodology of evaluating the safety level of train traffic, which allows for a comprehensive objective assessment of the quality of transportation service and its safety level.

Taking into account the scale of transport activity of railway transport and, accordingly, the increase in the level of transport safety and the scale of economic consequences arising from its decrease, the search for opportunities to assess the level of train traffic safety is considered one of the most urgent tasks.

Results and their discussion. The procedure for risk assessment is the regular determination of the probability of the occurrence of a risk and the consequences of violations of the legal

documents related to the railway transport sector in the event of its occurrence.

Transportation security, along with other indicators (speed of delivery, safety, continuity, etc.) is an important feature of the quality of transportation services provided to customers.

The safety situation is usually characterized by the number of absolute (number of incidents in a time interval) or specific (number of incidents per 1 million t.km.) number of violations.

At the same time, it is very important to assess the level of security, that is, the difference between the actual and normative state of security, because it is necessary to evaluate the results of security management. Various methods have been proposed for this, in particular, the following [8]:

$$K_{ext.risk.} = 1 - \frac{B_{norm\ of\ risk}}{B_{level\ of\ risk} + \phi_{risk.dis.}} \quad (1)$$

here $K_{ext.risk.}$ – is the level of cargo transportation security, expressed in units of shares, $0 \leq K_{ext.risk.} \leq 1$;

$B_{norm\ of\ risk}$ – standard of safety level of vehicles (accepted at the level of 0.95-1);

$B_{level\ of\ risk}$ – the actual level of safety of the transportation process, The number of accidents, accidents and other incidents per 1 million t.km.;

$\phi_{risk\ dis}$ – correction coefficient (), which takes into account the scale of losses caused by individual cases of security violations that caused serious damage.

In this case, the problem of determining the scientifically based value of the safety standard (values, criteria, etc.) arises. It is necessary to determine which violations are normative (that is, allowed).

If violations of the rule are accepted as completely absent, and the absolute value of the standard of safety level of vehicles is expressed in the form of

$B_{norm\ of\ risk} = 0$, regardless of the number of violations, the expression (1) by itself is $K_{ext.risk.}$ – will not solve the problem.

In the case of excluding the influence of the "human factor", the level of safety can be measured by the reliability of the technical system [9]:

$$K_{ext.risk.} = 1 - \prod_{i=1}^n (1 - P_i) \quad (2)$$

here n – number of system elements;

P_i – the probability of uninterrupted, i.e., uninterrupted operation of element i – in the system.

However, this value is only a feature that indicates the level of potential safety probability, not its actual level.

If, however, we assume that the standard state of safety is achieved in the complete absence of violations, then the formula for determining the level of safety of cargo transportation can be expressed as follows:

$$K_{ext.risk.} = \frac{N_{w-d.}}{N_0} = \frac{1-N_{disordered.}}{N_0} \quad (3)$$

bu yerda $N_{w-d.}$ – the number of shipments delivered without damage (accidents, accidents and other incidents);
 N_0 – the total number of freight shipments in the same period;
 $N_{disordered.}$ – the number of cargo shipments delivered in violation of established security standards.

Taking into account that security breaches have different consequences, it is appropriate to include the coefficient (3) that takes into account the severity of security breaches for each $\phi_{risk.dis.} \geq 1$ cases.

The equivalent of correlating the

severity of damage, that is, to calculate the coefficient $\phi_{risk.dis.}$, the ratio of the amount of damage may be different in different cases of security breach. After taking into account these circumstances, the formula (3) for determining the level of cargo transportation security looks like this:

$$K_{ext.risk.} = \frac{1-\sum N_{dis.} \cdot \phi_{risk.dis.}}{N_0} \quad (4)$$

As a result of the use of this formula, it is possible to objectively assess the quality of the transportation service and its level of safety.

Conclusion. The proposed train is a

new method of evaluating the level of traffic safety, which allows for a comprehensive objective assessment of the quality of the transportation service and its level of safety.

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USE OF INTEGRATED TECHNOLOGIES IN VOCATIONAL EDUCATION

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Abstract: There is discussed in the article importance of ICT and pedagogical technologies implementation in «Food security and safety equipment» teaching in higher education institutions. The article clarifies informational communication and pedagogical technologies, integration, integrated education and these meanings.

Keywords: IT - informational technology, pedagogic technology, communication, integration, integration education, communications, animations.

Introduction. The socio-economic reforms that have been carried out and are increasing in the country have led to fundamental changes in all aspects of society, including the education sector, its development, compared to other social institutions, is aimed at securing the future, which is worthy of every nation, every family, every citizen of Uzbekistan. , aimed at developing the formation of a safe life. It is important to develop this in professional educational institutions. In this regard, the demands placed on the quality of the professional activity of professors and teachers, including teachers of "Labor protection and safety technology" are increasing.

The analysis of the development dynamics of accidents, injuries and injuries caused by technical, sanitary-hygienic,

psychophysiological, organizational reasons shows that in the coming years, the urgency of combating the causes and consequences of accidents, occupational diseases, and injuries occurring at workplaces will increase.

The relevance of the problem of improving the use of integrated technologies in imparting knowledge on "Labor protection" to the students of professional education is related to the need to solve the problems between the need to protect the health and safety of workers in society and the actual situation of workers today. Until now, the methodology of organizing practical and laboratory trainings related to labor protection for teaching the science of "Labor protection" in professional educational institutions with the help of

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