
ANNOTATIONS OF THE ARTICLES

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BANK GUARANTEE: AS A UNIVERSAL TOOL FOR MINIMIZING THE RISK OF THE CUSTOMER IN PUBLIC PROCUREMENT SYSTEM

The development of the legislation, the increase in volume of government procurement of goods, works and services cause the application of the imperative measures, defining behavior of suppliers/contractors regarding execution of the assumed liabilities properly. One of such measures of ensuring the performance of the customer obligations is the bank guarantee. For this reason consideration of the bank guarantee is extremely relevant. The institute of the bank guarantee has broad application not only in Russian, but also in the international commercial turnover. The purpose of this article was complex consideration of the bank guarantee as specific instrument of the customer risks minimization in the system of state procurements. The main results is the difficulties revealing in obtaining the "white" bank guarantee at the present stage of development of state procurements and also the disclosure of advantages of using the bank guarantee as instrument of the customer risks minimization in comparison with other legislatively fixed tools.

Keywords: contract system, risks of the public procurement system, state and municipal needs, bank guarantee, enforcement of the contract.

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CURRENT STATE OF RECEIVABLE AND PAYABLE ACCOUNTS OF COMMERCIAL ORGANIZATIONS IN THE ORENBURG REGION AND THE DIRECTION OF ITS OPTIMIZATION

This article justifies the author's position on assessing the current state of receivables and payables in

commercial organizations of the Orenburg region.

The purpose of the article is the systematization of modern theoretical and practical approaches to optimizing the amounts of debt claims and liabilities of economic entities on the example of the region under investigation and to organizing analytical procedures to strengthen control over the fulfillment of the terms of concluded transactions between counterparties.

The methodological basis of research is general scientific principles and research methods: analysis and synthesis, induction and deduction, systematization of the theoretical foundations and practices of decision-making. In the framework of the integrated approach, we also used methods of observation, grouping and comparison.

The reasons for the current state of receivable and payable accounts have been determined; the coefficient of their ratio and receivable and payable turnover ratio was calculated. This indicator assesses the harmonious nature of the calculated relations between economic entities in the Orenburg region and the efficiency of cash flow management. The system of penal sanctions is justified. It is based on the ranking of counterparties on the degree of reliability and the size of the penalty depends on the rank of the counterparty.

The results of the study have both theoretical and applied scope of application and can be used in accounting practice of entities and for further research in the field of accounting.

Currently, organizations do not pay attention to control of timely fulfilment of obligations by debtors. There are no strictly defined measures to influence them for failure to fulfill the terms of the contract. It leads to the accumulation of accounts receivables and payables and to loss of solvency and financial stability of the economic entity. In this connection, the author of this research recommends a scale of penal that allows to stimulate counterparts to timely fulfill contract obligations and to prevent negative changes in the financial condition of the economic entity.

Keywords: *accounts receivable, accounts payable, transaction, counterparties, penalties.*

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ECONOMETRIC MODELLING OF INFLUENCE OF FACTORS ON THE COST OF INDIVIDUAL HOUSES IN RURAL AREAS OF THE ORENBURG REGION

The purpose of the conducted research consists in identification of the features and regularities operating in the secondary housing market in rural areas of the Orenburg region. During a research such general scientific methods as the analysis and synthesis, also statistical methods: selective, graphic, tabular, correlation and regression. It is possible to refer the following to the main results of work: first, the geographical location exerts considerable impact on the cost of real estate objects, so in the Central intraregional area of the price is higher, than in the others; secondly, the share of the houses equipped with the infrastructure giving comfort of accommodation is higher than 50%, and the specific weight of indicators of the outdoor constructions characterizing existence – is

lower than 50% that is connected with high cost of their construction and lack of urgent need in them. The results received during the research of the secondary housing market in rural areas can be useful to employees of the Ministry of social development of the Orenburg region to formation of the road map of development of peripheral areas of the region.

Keywords: *housing market, rural areas, housing cost, modeling, factors, influence.*

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ASSESSMENT OF POSITIONS OF TERRITORIAL SUBJECTS OF THE RUSSIAN FEDERATION ON THE LEVEL OF THE PUBLIC DEBT

Growth of the public internal debt of territorial subjects of the Russian Federation is a disturbing tendency in the last decade and leads to delay of development of economies of regions, in this regard the chosen subject of a research is relevant. The purpose of article consists in assessment of positions of territorial subjects of the Russian Federation on the level of a public debt in 2017. For achievement of a goal such methods as have been used: analysis and synthesis, tabular, graphic, groups. It is possible to refer to the main results of the executed investigation phase: the tendency to growth of a public debt of territorial subjects of the Russian Federation in absolute and relative expression is established; for the last 5 years there was a change of a vector of loan, the share of the credits in the commercial organizations has decreased, and the share of the budgetary credits has grown; large debtors – Krasnoyarsk land, Krasnodar land, the Moscow region and Tatarstan in 2017 relatively 2016 haven't increased the obligations, but generally about the country the situation still remains intense; only the package of measures of the economies of the region aimed at the development will allow to remove a problem of growth of a public debt. The directions of a further research of the developed subject, identification and measurement of influence of socio-economic factors of the territorial subjects of the Russian Federation making impact on the level of a public debt is.

Keywords: *public debt, the consolidated budget, structure, dynamics, deficiency, differentiation of territorial subjects of the Russian Federation.*

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RESEARCH OF DYNAMICS AND STRUCTURE OF INVESTMENTS INTO ECONOMY OF THE ORENBURG REGION

Development of regional economy in many respects depends on existence of financial resources, as a rule, their source the credit and loans in credit institutions are, but it is quite dangerous let which leads to debt load of economy. An exit from current situation is creation of conditions for formation of soft investment climate and as a result attraction of private investments into economy. From here the purpose of the carried-out work follows - it is assessment of level, dynamics and structure of the investments directed to economy of the Orenburg region. As methods were used general scientific, such as analysis and synthesis and also chastnonauchny (statistical) – graphic, tabular, coefficient, correlation and regression. The main results can be considered the following: first, the tendency on decrease in the volume of investment into region economy, since 2014 is revealed; secondly, the structure of investments by types of fixed assets, form of ownership and branches remains invariable since 2010; thirdly, the main impact on investment process in the region is exerted by state of the economy and the standard of living of the population. The received results can be useful to analysts and employees of the public institutions which are engaged in formation of soft investment climate in the region.

Keywords: investments, fixed assets, region, dynamics, structure, investment climate.

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METHODICAL APPROACHES TO THE ASSESSMENT OF THE IMPACT OF FOREIGN INVESTMENTS ON THE SOCIAL AND ECONOMIC POTENTIAL OF THE REGION

Development of tools for the analysis of social and economic potential of the region is a relevant task. The author sets the object to develop the methodical approaches to the influence assessment of separate factors of development in the territory on the potential of the region. Such assessment allows to position objectively the region in the system of world economic communications, to define reserves and the directions of the economy growth. In the research, along with traditional analytical, statistical, graphic methods, modeling methods, the rating method is used. Its use allows to reduce subjectivity of results and to carry out an assessment of selective groups of indicators. In the article the analysis of investment activity on regions in the Russian Federation and countrywide is carried out. As a result, the growth of foreign investments and decrease in budgetary funds was noted that speaks about a stage of economy growth. The rating assessment of indicators of investments and gross regional product showed various influence on regions. It allows to give the assessment of the importance of various factors on development of territories and can form a base for creation of economic models.

Keywords: potential of the region, development factors, foreign investments, rating.

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CLASSIFICATION OF SUBJECTS OF THE RUSSIAN FEDERATION ON THE CONDITION OF SUBSIDED AGRICULTURAL INSURANCE

In the Russian Federation, during the last decades, when conducting the scientific researches, the interest in various classifications of subjects of the Russian Federation, characterizing their socio-economic development, has significantly increased. The classification of subjects of the Russian Federation in terms of the level and development of agricultural production is not an exception. However, up to the present time, there are no publications, in which subjects of the Russian Federation are adequately and correctly described in the state of agricultural insurance with state support.

The aim of the work is classification of subjects of the Russian Federation on the level of development of agricultural insurance with state support.

In the present paper, to reduce the dimension of the original indicative space and to overcome the multicollinearity between the indicators, the principal component method was used. Classification of the subjects of the Russian Federation was conducted by the method of cluster analysis. Using the Chow test, regression coefficients are analyzed in the equations, constructed on the selected clusters, which made it possible to use the dummy variable in the construction of the generalized regression model.

The study made it possible to identify two groups of subjects of the Russian Federation on the state of agricultural insurance with state support and to determine the impact of two key indicators on the target indicator - the percentage of the area under the insured crops, both for each selected group of entities, and in general for the RF.

The received results testify to the low interest of both agricultural producers and management bodies in the subjects of the Russian Federation to agricultural insurance.

Keywords: agriculture, insurance, subsidies, cluster analysis, main components, regression.

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MARKET ARCHITECTURE OF THE SHOE INDUSTRY IN RUSSIA

The purpose of the article is to determine the nature of changes in the architecture of the market (on the example of the shoe industry) in connection with the implementation of the policy of import substitution. It is extremely important to identify common trends for all markets in order to identify the characteristic features of institutional changes in the markets due to the changing economic situation in the country. The method of institutional analysis allows to determine the results of changes in the architecture of the market, as well as to determine by the example of one of the largest players in the shoe industry, how the market is changing from the buyer's point of view, and the labor market, from the position of hiring personnel for the shoe industry. The article updates the researches of institutional changes in the Russian real sector of the economy in connection with the policy of import substitution, at the same time, the article cites arguments in defense of the domestic market from cheap imports, which managed to replace the product displaced by high prices from European countries.

Keywords: *import substitution, importer substitution, shoe industry, market architecture, real sector labor market.*

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**RETROSPECTIVE ANALYSIS OF DEVELOPMENT OF REPORTING
ON COLLECTING CUSTOMS PAYMENTS IN THE RUSSIAN FEDERATION**

The purpose of the article is to identify, on the basis of the historical data studies, the periods of the statistical reporting development of bodies for collecting customs payments, from the time of the origin of foreign trade and the activities of the customs service to the present time. As a tool for proving the point of view of authors, such general scientific methods as analysis and synthesis, as well as graphical and historical methods of analysis are used. As a result, a complex periodization of the development of statistical reporting of customs authorities on the collection of customs payments was carried out. The characteristic features for each historical period of the formation of statistical reporting are reflected in connection with the development of the foreign trade business and the customs service of the Russian Federation as a whole. Scientific novelty can be considered the selected historical stages (periods) of the development of statistical reporting on the collection of customs payments in the Russian Federation. The findings and results obtained can be used in further studies in the field of statistics of customs payments, for the conduct of scientific and educational process in higher education institutions of the appropriate profile.

Keywords: customs statistics, statistics of customs payments, reporting, retrospective review, periodization.

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ANALYTICAL ENSURING OF PHYSICAL PROTECTION IN THE SYSTEM OF ECONOMIC SECURITY OF UNIVERSITIES

Despite the large number of works devoted to the problems of economic security of higher education institutions, the research of the factors influencing physical protection of the University, in our opinion, remains insufficiently studied. The analysis of works devoted to this issue, shows that, to ensure the physical security of the institutions of higher education requires the identification of a large number of different factors. Therefore, one of the main demands of the security system is to provide with adequate information on this object of management. The purpose of this research is to develop the algorithm of identification and evaluation of threats to the most important components of the physical security of educational institutions and that improve the level of information security management. The subject of the research is to identify contemporary threats to the physical safety of educational institutions. When carrying out the research general scientific methods and research methods (comparison, synthesis, classification) were used.

The main findings on the analysis of the literature and current practice in the sphere of economic security of educational institutions are defined. On the basis of the analysis, the structure of the economic security system of the University is clarified. The need to complete this system by the subsystem of physical security is recognized. The interrelation between the infrastructure of the higher education institution and the process of risk size management is revealed. Stages of identification and assessment of risks at the organization of physical protection of higher education institution are created.

Keywords: *economic security, physical safety, higher education institution, risk assessment, analysis, control.*

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SCREENING OF «BIG DATA» TO DETECT CARTELS IN INDUSTRY

The detection of cartels in industry is a rather laborious task, for the solution of which the authorities can apply a variety of tools. One of such tools is the screening of big data, since it is the comparison of a large number of transactions, as well as the trajectories of market participants' behavior, that allows us to identify patterns of market behavior and to diagnose deviations from fair competition with a high degree of reliability. The scale of this problem is confirmed by the revealed features of the analysis of competition in cases of cartels. For screening, it is necessary to develop appropriate parameters describing the state of a specific market and the actions of its participants. Therefore, the purpose of the article is to justify the screening methodology on the basis of a special system of parameters. For this, comparative, analytical and graphical methods are used. The main result is an approved screening technique that is suitable for detection cartels in the industry based on the lobe diagram of the components of the criterion for the zone of market behavior in the industry.

Keywords: cartels, industry, screening, big data, multi-parametric analysis of commodity markets.

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THE DEVELOPMENT FACTORS OF THE REGULATORY IMPACT ASSESSMENT AT THE MUNICIPAL LEVEL

The authors analyzed the influence of some economic and geographical factors on the development of the regulatory impact assessment (RIA) institute in municipalities of the Ural federal district.

The comparative and institutional approaches were the methodological basis of the research. Also the authors used factor and content analysis. The RIA development level in the municipalities of the Urals Federal district's regions was analyzed according to the original methodology with consideration of the population in the municipality, its remoteness from the regional center and the volume of investments in fixed capital of enterprises on the territory.

The regulatory impact assessment is aimed at reducing administrative barriers by reducing inappropriate regulatory decisions. However, the features and character of its development at the municipal level in Russia are not well understood. It prevents the distribution of the best practices.

The authors summarized the first results of the RIA deployment in the Ural Federal district's municipalities. The considerable inertia of this institution's implementation at the municipal level was fixed. The insufficient transparency of the process, low knowledge and activity of the involved communities are the main reasons of that inertia.

Keywords: factor analysis, regulatory impact assessment, municipalities, Ural Federal District.

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HONEST PHILOSOPHY

Within the framework of the correspondence round table, the object of discussion was the multidimensional problem of honest philosophizing, which has acquired considerable relevance in our time. G.L. Tulchinsky, reflecting on philosophy as a mental practice that helps a person find his credo, self-determination in being, notes that the sign of honesty is inherent in her organically. V.V. Mironov, critical of contemporary realities, draws attention to the fact that philosophy not only arises, but also successfully realizes its potential in a genuine democracy that ensures the existence of political freedom. B.V. Markov, raising the question of the immersion of modern philosophy in the world of suffering, expresses the idea that people who exist in conditions of lack of meaning, can find a vital support in morality. R.Yu. Rakhmatullin, who acknowledges the impossibility of the existence of unambiguous answers to worldview questions, who believes all knowledge to be both objective and subjective, justifies the plurality of philosophies. A.M. Maksimov, who mentions the richness of history with examples of honest philosophizing, shows that a person who knows the world always faces a choice between light but unworthy ways of obtaining the sought and difficult way of finding meaning with reliance on honor and conscience. V.A. Bajanov, accentuating the need to eradicate the sin of plagiarism, comprehends, describes and suggests using foreign experience in our country to combat the phenomenon of «shadow science». I.A. Belyaev, who compares the content of the concepts of honesty of the philosopher and his honor, asserts that they, being attributes of love of wisdom, are the reverse sides of each other.

Keywords: dishonest philosophizing, morality, objective knowledge, plagiarism, political freedom, philosopher, philosophy, philosophical knowledge, philosophizing, honest philosophizing, honesty, honor.

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**NOISEPROOF FIBER-OPTIC INFORMATION TRANSMISSION LINE
WITH THE REFLECTOMETRIC SYSTEM OF ATTENUATION DIAGNOSTICS**

Light guides have unique characteristics of the environment for information transfer, but they are sensitive to the impact of all physical fields, which, on the one hand, allows creating unique optical fiber sensors on the characteristics, and, on the other hand, it is a reason that reduces noise immunity of information transmission.

The article proposes an approach that makes it possible to build interference-resistant fiber-optic transmission lines for analog information with a fiber-optic channel attenuation diagnostics system. It allows them to work under the influence of destabilizing factors such as changes in ambient temperature, mechanical stress variables, pressure changes, which lead to the increase in the attenuation of fiber-optic channels transmitting information, and as a result, distortion of the information transmitted through them.

To solve the problem, a system has been introduced into the fiber-optic line, allowing continuous diagnostics of the attenuation of its optical fiber. Taking into account the attenuation of the optical fiber of the line, the correction is made for the value of the signal recorded by the registrar transmitted along the line. This is achieved by increasing the gain of the amplifier, which fixes the signal at the output of the line, by an amount proportional to the damping value of the optical fiber of the line. Due to the fulfillment of this function by the line, it is possible to measure under the influence of external destabilizing factors. The metrological properties of the proposed line are estimated. It is shown that the effect of destabilizing factors on the resulting error can be reduced almost completely by using digital methods for completing all operations in the electronic part and using a quartz fiber in the proposed line.

Keywords: *fiber-optic lines, diagnostics of attenuation, correction of the output signal with allowance for damping.*

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**THE SUPPORT SYSTEM OF DECISION-MAKING ACCORDING TO QUALITY
OF RENDERING SOCIAL SERVICES WITH ELEMENTS OF ARTIFICIAL INTELLIGENCE**

The urgency of the problem is caused by the increase in the number of clients applying for social assistance to the social service institution and the absence at the moment of a unified methodology for assessing the quality of social services.

The purpose of the article is the development and the program implementation of decision modules based on models and methods of artificial intelligence.

Leading models and methods to investigate this problem are models of representation of knowledge in expert systems, fuzzy modeling and a method of a priori ranking of criteria implemented as separate software modules in the DSS architecture. The proposed approach makes it possible to improve the efficiency and quality of decisions in the social sphere.

Main research results: a hybrid decision support system (DSS) was developed to assess the quality of social services to the population with elements of artificial intelligence; software algorithms for output based on the developed knowledge bases of the production expert system and the system of fuzzy logical inference of the domain are implemented; testing and analysis of the effectiveness of software modules are performed.

The materials of the article and the results of the research can be useful for developers of automated systems with decision support functions, and are used in institutions that provide social services to the public.

Keywords: *assessment of social services, illegibility of data, fuzzy logical conclusion.*

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**INTERNAL LIGHTING MANAGEMENT ON THE BASIS
OF FUZZY LOGIC INFERENCE**

The urgency of the problem is caused by the need to develop and implement energy-efficient and energy-reducing technologies, as one of the priority strategies for innovative development of the Russian Federation, and the lack of energy efficient lighting control systems, which consumes up to 30% of the generated electricity.

The aim of the research is to develop an energy-efficient indoor lighting control system for the production facility.

The research methods are fuzzy modeling and the Mamdani fuzzy inference method, implemented in the Delphi programming environment.

The main results of the research: a new method for energy-efficient control of the capacity of indoor lighting facilities is proposed. It differs from existing ones in that the control effect is created by forming two input signals from measuring sensors: lighting and people presence, taking into account the regulated standards of illumination of production facilities. A new mathematical model for determining the optimal value of the power consumption by the indoor lighting facilities of production facilities is developed on the basis of the Mamdani fuzzy inference method. A hardware-software stand was developed for carrying out experimental studies.

Keywords: *energy-efficient control system, internal lighting, fuzzy conclusion.*

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CORPORATE NETWORK SIMULATION BASED ON THE PRINCIPLES OF SOFTWARE DEFINED INFRASTRUCTURE AND NETWORK FUNCTION VIRTUALIZATION

The object is to research corporate networks.

The aim is to create models of corporate network built on the principles of software defined infrastructure.

One of the most difficult area and at the same time low-presented in the finished modeling systems is the virtualization of network functions and protocols of software defined networking. Therefore, the researchers, decided to create an adequate model of such networks, face the lack of ready-made mathematically certain regularities in the behavior of the traffic.

The approach is to use approximation methods in the simulation taking into account the first two or three moments of the distributions of traffic parameters.

As a result, the model was developed showing a similar form of behavior under load, correction can be made after revision of the model for a particular network implementation in the form of correction coefficients after the first runs.

The created approach allows to repeat the behavior of the equipment with high accuracy under various operation modes in the same model on condition of the specific adjustments for future implementation.

Keywords: *software-defined networks, NFV-networks, network monitoring.*

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**THE RECOGNITION ALGORITHM OF THE PRODUCTION SITUATIONS IN MANAGEMENT
INFORMATION SYSTEMS BASED ON COMPOUND BAYESIAN TASK DECISION**

Currently there is a tendency of implementation multi-level integrated information management systems at the enterprise. Unfortunately, in such systems the procedures of automatic recognition of production situations are not implemented, while the management process involves receiving information about all the functioning conditions of object of management to make good management decisions. Therefore, the research topic has practical importance and is associated with improved information-control systems of modern enterprises by introducing procedures for automatic recognition of industrial situations.

The purpose of this article is to develop a feasible algorithm of the production situations recognition in the management information systems based on compound Bayesian rules of making decision.

In the studies, we used scientific methods such as mathematical methods of graph theory, methods of theory of algorithms and combinatorics, methods of probability theory and statistical analysis.

The result of the study was the development of procedure for reducing the amount of computation when implementing the compound Bayesian rule of making decision and synthesis on its basis a composite graph-scheme algorithm of recognition of production situations.

Keywords: *recognition of production situations, compound Bayesian task.*

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MODEL OF A CHOICE OF A ROLLING STOCK FOR CARGOES TRANSPORTATION BY MOTOR TRANSPORT

The urgency of the problem under investigation is due to the fact that the modern automobile industry produces various types of cargo equipment, which has its technical characteristics and performance characteristics, and among this diversity it is necessary to choose a car that will in each case achieve the expected effect. The article is aimed at determining the key criteria for the selection of rolling stock to determine the dependence of the optimization parameter (the rolling stock that corresponds to the operating conditions) from the factors influencing the choice. The authors of the article analyzed the existing methods, which led to the conclusion that the methodological basis for the selection of the rolling stock should be a system approach that allows to establish the relationship between the values of the rolling stock performance meters and the operating conditions determined by the customer of the transport service.

The materials of the article can be useful for scientists, specialists of transport companies, as well as students studying in the field of preparation technology of transport processes.

Keywords: rolling stock, cargo, operating conditions, truck performance, operational quality.

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INFLUENCE OF LEGAL REGULATION OF THE ORGANIZATIONAL AND FUNCTIONAL STRUCTURE OF THE SUBJECT OF MOTOR TRANSPORT ACTIVITY ON THE SAFETY OF PASSENGERS TRANSPORTATION

The purpose of the study is to develop theoretical and methodological provisions for the impact assessment of legal regulation of organizational and functional structure of subjects of road transport activities on the safety of the passengers' transportation.

The relevance of the study is defined by high accident risk during the transportation of passengers by road transport, due to the low efficiency of the process organization.

Methods the study are based on the theory of transport processes, the theory of qualimetry and quality management taking into account the specifics of automobile transport and mathematical statistics. As indicators of safety of passengers' transportation we take the number of road accidents committed by drivers of licensed carriers to one thousand of buses and the number of injured in road accidents committed by drivers of licensed carriers to one thousand of buses.

The main results indicate that the values of these indicators decreased by more than 4 times, with increasing values of the generalized indicator of quality, defined by organizational and functional structure of the regional carriers in the trucking laws. The elements of the organizational and functional structure and their interval influences on indicators of safety of transport process are set. The results should be applied to improve the normative-legal regulation of organizational and functional structure of the carriers at various levels – from Federal legislation up to the standards of the company.

Keywords: road transport, legislation, organizational and functional structure, passenger transportation, security.

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NOMOGRAMS FOR DETERMINING THE ENDURANCE OF PLATES USED IN LINKS OF DRIVING ROLLER CHAINS

The objective of this research is the simplification and providing of high performance of the chain drive estimation while predicting the endurance for roller chains plates. The used method is a building of nomograms that depict the variation of endurance for different roller chains plates depending on chain pitch, stress values in cross-section of plate and plate type. The relevance of the proposed approach is defined by the large labor intensity when the endurance is determined with use of analytical dependencies. The main results of the research is the nomograms that are built using results of computational experiments (for roller chain plates with pitches from 12,7 mm to 25,4 mm) and physical experiments (for roller chain plates with pitch 25,4 mm). Physical experiments on cyclic strength determination had been performed with use of modern testing machine MIKROTRON for plates type 0 (standard shape) and plates type II (modified plates with a flattening of the side faces) produced by two manufactures. Obtained nomograms allow estimating the plates endurance (as number of cycles before failure) for inner chain links depending on stress value in the plate cross-section under the working load. Nomograms enable the quick comparison of predicted endurance for chains with pitches from 12,7 mm to 65,5 mm. In the case of using the plates with dimension that are differ from standard chains dimensions, the endurance values obtained on the nomograms are adjusted with regard to actual dimensions in accordance of adjusting factor.

Keywords: roller chain, plate of chain link, endurance, nomogram.

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