

ABSTRACTS

THEORY AND METHODS OF PRODUCTION ORGANIZATION

Turovets O.G., Rodionova V.N.

THE GENESIS OF LEAN PRODUCTION: RUSSIAN ORIGINS

The concept of lean production originates from the establishment of Toyota industrial system, which was the first to implement the idea of creating the production process based on the «just-in-time» principle. Many enterprises of Russia have already implemented the principles of lean production. However, not all companies that have launched the lean production program, reach the expected results. The practice shows that the success of lean projects is largely determined by the extent to which the personnel accepts the principles of new organization of production systems.

Therefore, it is important to combine the search for new technologies with Russian origins of effective organization of production, work and management.

The article outlines the key concepts, forming the theoretical and methodological foundation of creating highly efficient industrial systems, developed by Russian scientists and practitioners in the period when the science of production system organization was founded (1860-1950). They include the Theory of Organizational Systems (by A.A. Bogdanov); the laws and principles of enterprise organization and production processes (by K. Adametsky and N.F. Charnovsky); the concept of scientific organization of work (by A. Gastev); the approaches to creating cellular structures and production organization (by S.P. Mitrofanov); the concept of product quality management (Saratov system of defect-free production) the approaches to creating the integrated system of preventive equipment repair and workplace maintenance

Key words: lean production, production system, Russian origins

Kalachanov V.D., Efimova N.S., Rychagov M.S., Dobrov V.P.

ORGANIZATION OF AIRCRAFT EQUIPMENT PRODUCTION BASED ON IMPLEMENTATION OF CORPORATE INFORMATION SYSTEMS

The article develops the economic methods of organizing the production of aircraft equipment by implementation of integrated corporate information systems in aviation industry. At present, it is essential to develop the economic mechanism for implementing information technologies in the organization of aircraft equipment production that will help to improve the complex internal industrial processes at aircraft manufacturing companies. The implementation of information systems at aircraft manufacturing companies must take place as part of the complex project, intended to impact a number of departments simultaneously. At the same time, the introduction of information systems is a project aimed at elaborating the methods of information management for organizing the production at aircraft manufacturing companies.

The article proposes the re-engineering of business processes at automated aircraft manufacturing companies, and develops the methodological approach to setting the strategic goals of information technologies in provision processes, namely: the implementation of uniform work standards with the greatest possible centralization of processes and functions; studying the feasibility and possibility of integrating the current and perspective systems into basic activities. The implementation of the integrated information system for organizing the production of aircraft equipment will help to optimize and improve the following processes at aircraft manufacturing companies: 1) drafting production plans; 2) planning for needs in materials and components, as well as timing and volumes of deliveries for implementing production plans; 3) inventory and procurement management, including: a) contract administration; b) implementation of centralized procurement; c) recording and optimization of warehouse and shop stocks; d) planning of production capacities (from the overall corporate strategy to the plans for using specific machinery and equipment); e) servicing and repair of machines and vehicle equipment (including technical maintenance); f) operational financial management, including drafting financial plans and control of

their execution; g) financial and management accounting; h) management of projects including phase and resource planning for their implementation; i) personnel management including optimizing the number of production and non-production employees, j) the implementation of the logistic functions, including customs logistics, rotating and component pools, automatic placement and monitoring of orders, client support in the organization of warehouses and stockpile management

Key words: organization of production, aviation industry, integrated information systems, information technologies, aircraft construction

PRODUCTION ORGANIZATION PRACTICE

Krivyakin K.S.

THE IMPROVEMENT OF THE WORKSHOP PRODUCTION STRUCTURE

The article reviews the main areas of improvement and development of the workshop production structure. The tasks of production structure development (including the reduction of the job assignment rate, raising the level of workshop closedness, the growth in the proportion of linear and cellular structures, and balancing the workshop production capacity) originate from the principles of industrial structure creation, such as specialization, directness, proportionality and flexibility. The paper proposes to establish the «virtual» dedicated zones, using collective forms of work organization, the essence of which consists in aggregating the disparate jobs and employees of various professions into an autonomous production team, taking full responsibility for execution of the technologically complete set of works related to manufacturing the components of assigned nomenclature. In the article, the mechanism of balancing the workshop production capacity is suggested which determines the procedure of assessing the throughput capacity of the workshop production chain, and helps to identify the possible options for eliminating the disparities. As part of the proposed mechanism, the author develops the simulation model, which enables to determine the workshop capacity utilization on the basis of the utilization rate for a single zone. It is provided that simulation is executed with respect to a specific product with known coefficients which determine the quantitative interrelation between utilization parameters of the mechanical assembly zone and those of other production zones

Key words: production structure, production capacity, industrial process, organization of production

Burchik V.V., Kuzmich N.P.

RAISING THE ORGANIZATIONAL AND TECHNOLOGICAL RELIABILITY OF CONSTRUCTION INDUSTRY IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT OF BUILDING COMPANIES

The article presents a study of organizational and technological reliability of building companies, which has demonstrated the possible use of probabilistic and statistical methods and models. The organizational and technological reliability of construction industry is typically understood as its ability to keep its operating parameters within the specified limits and achieve the planned results under given conditions of production. The organizational and technological reliability of construction industry depends upon a large number of random factors associated with external and internal environment influence. The article describes the methods of enhancing the organizational and technological reliability of construction industry. The effectiveness of raising the organizational and technological reliability of construction can be economically evaluated by comparing the costs of construction activities and their effects. The modern ways of raising the organizational and technological reliability of construction have been proposed, which include: 1) the development and improvement of territorial and corporate regulatory frameworks; 2) the implementation of logistics in construction industry; 3) the enhancement of the quality management

system in construction industry; 4) the trial design of organizational and technological documentation; etc.

Key words: probabilistic nature, logistics, organizational and technological reliability, rejection, redundancy, construction, reconstruction

Kinyakin S.N.

ORGANIZATIONAL AND ECONOMIC MECHANISM OF MANAGING THE CORPORATE INDUSTRIAL ACTIVITY

The article develops the organizational and economic mechanism of managing the corporate industrial activity, which includes the interrelated functional modules. The main purpose of the industrial activity management mechanism is the provision of balanced company performance, ensuring the observance of such principles as complexity, anticipation, timeliness, stability, efficiency, motivation and harmony.

The purpose of the industrial activity management mechanism is to determine the rate of rational distribution of manufacturing capacities for current production and innovative activity.

The intensification of innovative activity causes the non-equilibrium state and the loss of financial stability, due to which the decisions must be made in accordance with the actual state of a company.

In the development of the mechanism, it is important to consider such factors as the evaluation of external environment influence and corporate potential, the implementation of balanced production planning, taking account of the need for innovative activity on the basis of the economic model, the impact of development cyclicity upon industrial company performance, etc.

Key words: organizational and economic mechanism, production potential, balanced planning, stakeholders, effectiveness of the industrial activity, distribution of production capacity

COMPANY MANAGEMENT

Lutovinov P.P., Melenkina S.A.

THE SYSTEMATIZATION OF FACTORS RELATED TO THE MECHANISM OF INNOVATIVE CULTURE MANAGEMENT AT INDUSTRIAL COMPANIES

The article is devoted to the analysis of innovative culture of an industrial company, and studies certain aspects of creating the mechanism of innovative culture management of industrial companies for enhancing their competitiveness. The innovative culture of industrial companies lays the basis for modernization of production, the increase of innovation activity and the transfer to the innovative way of economic development. Due to the fact that manufacturing industries constitute, respectively, 17% of the sectoral structure of gross added value of RF subjects and 35% of the one of Chelyabinsk Region, these are industrial companies which largely determine the intellectual and technological level of the country and serve as a basis of its economic security. Therefore, the policies oriented at the growth of industrial corporate innovative culture will allow to implement the course, declared by the RF authorities and aimed at production modernization in conditions of advanced development of processing industries. The article draws up the classification of factors, shaping the innovative culture of an industrial company, which ensures their most comprehensive consideration and creates the prerequisites for easing the negative effects and enhancing the positive ones, which affect the competitiveness of a company. In the course of investigation, the comparative, economic-statistical and legal types of analysis have been used

Key words: innovative culture of industrial companies, innovative culture management, factors of innovative culture, classification of factors, reserves for enhancing the innovation culture, ensuring competitiveness

Zhivora A.A.

THE ANALYSIS OF RISK SITUATIONS AT ENTERPRISES

Mankind has long been confronted with risk. With the development of society and science, the impact of risk has increased. Every day, we encounter various types of risks, from economical to psychological ones. For enterprises, risk is a core factor, and much depends on it. Therefore, the classification, assessment and management of risks are of great importance for successful development of enterprises. The article describes the main approaches to the definition of risk. It substantiates the need for identification, assessment and management of risks in the agricultural sector. The categories, types and tools of risk coverage have been studied which are most often encountered in the course of agricultural activity. The paper highlights the phases of risk management at agricultural companies. In conclusion, the proposals have been formulated for compliance with the concept of acceptable risk in production, processing, sale and consumption of agricultural products

Key words: risk, risk management, agriculture, tools of risk coverage, classification of risks

ECONOMIC PROBLEMS OF PRODUCTION ORGANIZATION

Kizlik T.A.

THE ANALYSIS OF EFFECTIVE USE OF PRODUCTION FACTORS

As economy evolved together with human civilization, the process of production developed and changed too. Among other things, this has been reflected in the development of theories of production factors. The economic relations continue to develop, and the correct knowledge of production factors, their relationships and use determines the efficiency of production organization at separate enterprises, at the national level and worldwide. The article investigates the classification of production factors, and studies the relationships between the set of production factors and the highest possible output. The criteria have been worked out to determine the optimal combination of production factors. The economic views of production factors and their interaction, typical for modern economic thought, are different from those of the past. Various economic doctrines highlight different factors of production. The systems of views, shared by various economic schools, present the main factors directly affecting the production process which determine its effectiveness. In the economic theory, it is generally recognized that production factors fall into three classical basic types, namely, land, capital and labour. At the contemporary stage of civilization development, such independent production factors as entrepreneurial skills, science, information and time, are particularly important. The production factors are interchangeable which is due not only to specific needs and design features of products, but, mainly, to scarcity of resources, as well as the efficiency of their use. In practice, the choice of the optimal combination of production factors is made by their systematic substitution, technical modernization, renewal, expansion and reconstruction of existing enterprises, as well as by constructing new ones. Also, it is necessary to upgrade the technological equipment as often as possible (every 4-5 years), in accordance with the requirements of scientific and technical progress, and production diversification

Key words: production factors, production function, productivity, marginal product, production efficiency, optimal combination of production factors

Ershova M.V., Zharikov V.D., Zharikov R.V., Zharikov V.V.

THE MODEL OF LABOUR PRODUCTIVITY GROWTH OF THE INDUSTRIAL COMPANY STAFF

In the article, the model of labour productivity growth is proposed which allows for comprehensive solution of problems concerned with reduction in workforce and, consequently, for raising the labour productivity. Using the proposed methodology, the assessment of labour

productivity growth has been performed for a concrete company.

The paper reveals the organizational, technical, social, motivational, technological, economic and logistical factors of labour productivity growth. It describes the impact of each factor on productivity growth at an industrial company. The article determines the impact of workforce reduction on various areas of staff activity, namely, the decrease of work-time loss and failure costs, the increase of the output, the growth of deliveries for product manufacture, the change in the product range, and raising the technical level of production due to modernization of technological equipment and reduced labour intensity. The growth of labour productivity is determined by relative reduction in the number of employees working in accordance with the formula, presented in the model.

In order to detect the work-time loss, the article recommends to use the methods of motion study and stopwatch study. The motion study helps to detect the work-time loss within a working shift, and take measures for its elimination. The stopwatch study is the method of assessing the time expenditure on operations and transfers. It is carried out by repeated calculation of actions performed per one working shift.

The investigation of labour productivity growth at the JSC «The Confectionary Company TAKF» has shown that the recent growth of labour productivity was mostly due to technical factors, particularly, the acquisition and implementation of wafer production lines.

Conclusions: The growth of labour productivity of the industrial company staff is the result of effective administration and creation of conditions for productive work

Key words: labour productivity, factors of labour productivity growth, factors of relative workforce reduction

Belyaeva S.A., Gorshkov Y.V.

THE SYSTEM OF PARAMETERS FOR EVALUATING THE ECONOMIC COMPONENTS OF THE ORGANIZATIONAL –ECONOMIC MECHANISM OF PROJECT MANAGEMENT AT COMPANIES OF ELECTRONIC INDUSTRY

The article presents the author's interpretation of the organizational-economic mechanism of project management, implemented by companies of electronic industry. The special attention is paid to the economic dimension of the mechanism, evaluation of its components, and the peculiarities of their implementation. The effectiveness of project management is largely dependent upon the sound use of economic and financial tools at all phases of the project life cycle. The effectiveness of their implementation can be evaluated by the system of parameters, proposed in the article, which is used to analyze the process of operating project management, and permits to keep track of expenditure, as to detect the unjustified increase of costs and prevent this process from becoming uncontrolled and irreversible

Key words: system of parameters, economic dimension, organizational-economic mechanism, project management, companies of electronic industry

QUALITY AND COMPETITIVENESS

Sidorin A.V., Sidorin V.V., Pokrovskaya M.V.

THE CLUSTER ORGANIZATIONAL MODEL OF DESIGN AND DEVELOPMENT OF RADIOELECTRONIC MILITARY AND DUAL-PURPOSE MEANS

The strict requirements for quality and competitiveness of radioelectronic means, developed as part of the State Defence Order, for effectiveness and timeliness of their design necessitate the elaboration of new organizational and technical solutions, as well as pooling the resources of all potential participants of the production process. This problem can be solved by using the model of organizational interaction of industrial enterprises, scientific institutions and technical universities. One of the tasks of such interaction is to ensure the quality of military radioelectronic means

through the development of current corporate quality management systems, as to increase the effectiveness of using the intellectual property, and improve the forms of organizational interaction between the industrial enterprises and educational institutions. The cluster approach underlying the model provides for optimal allocation of consolidated resources of all participants and the effectiveness of the system for ensuring the quality of the designed radioelectronic means at the life-cycle stage of planning and development. The toolkit of regulatory and methodological support coordinating the activities of all participants of the educational, scientific and production cluster, ensures its effectiveness

Key words: radioelectronic means, scientific and production cluster, quality management, life cycle of products, scientific and technical products, technical university

INNOVATIVE PROCESS MANAGEMENT

Ovsyannikov S.V., Davydova E.Y.

THE GROWTH OF RESOURCE POTENTIAL AND INNOVATION MANAGEMENT AS A BASIS OF CREATING THE INVESTMENT STRATEGY OF RECESSION-PROOF DEVELOPMENT

The main factors have been reviewed contributing to maintenance of companies in modern economic conditions, as to prevent their bankruptcy and ensure the crisis resilience of investment activity. It is grounded that the creation of crisis resilience mechanism will make it possible to ensure the sustainable investment activity, taking account of changes in external environment and the specific movement of capital investments. Since the instability of company activity can lead to its collapse, loss of control and other negative consequences, the article shows the necessity for improving the system of strategic planning in the main areas of corporate investment activity. It demonstrates the dependence of the investment strategy goals and the types of emerging problems upon the life-cycle stage of the company. The crucial role of innovations for ensuring the sustainable development of companies has been revealed. It is proved that the study and promotion of innovations are the basis of successful business development. The firms, whose development priority is innovation-based modernization of the main industrial stocks, are more successful and occupy key positions in the market. Consequently, special attention must be paid to investment support of innovations, since their implementation is the basis of the development strategy

Key words: innovations, investment strategies, crisis resilience of the company development, strategic planning, resource potential

Goncharenko M.A., Dubravina L.I.

CREATING THE STRUCTURE OF THE ORGANIZATIONAL-ECONOMIC MECHANISM FOR MANAGING THE INNOVATIVE ACTIVITY OF ENTERPRISES

The article defines the concept of organizational and economic mechanism for managing the innovative activity of an enterprise. The distinctive feature of this mechanism is that it is considered comprehensively, with account of economic methods, instruments and policies aimed at ensuring the effective short-term and long-term development. The paper justifies the need for formation and implementation of this mechanism at domestic meat processing enterprises, and proposes the structure of the organizational-economic mechanism for managing the innovative activity of an enterprise which includes the analytic group, expert groups, structural subdivisions and the General Director of the enterprise, which perform a certain set of duties and responsibilities. The article also presents the detailed description of supporting elements of the mechanism. The interaction of elements of the proposed mechanism is accompanied by informational support which contributes to more effective development of innovative activity at meat processing enterprises under study

Key words: structure, mechanism, organizational-economic, management, innovations, enterprises, enterprise

REGIONAL ASPECTS OF PRODUCTION ORGANIZATION

Moiseeva N.K., Kushnir A.O.

ORGANIZATIONAL-ECONOMIC RELATIONS IN THE INTERACTION OF TRADITIONAL AND ONLINE MARKETS

The article analyzes the retail markets of the USA, Europe and BRIC countries, which permits to evaluate the pace of «e-commerce» development, and explores the peculiarities of the Russian regional presence of key players of the Internet in the area of electronics. It is shown that the organization of cooperation between the markets of different kinds (i.e. «online» and traditional ones) allows for increasing the efficiency of company performance due to concentration of resources in strategically important areas of development, the improvement of competitiveness and the growth of investment potential. Based on the conclusions made, the integration processes have been discussed, which rest on the search for combinatory variants of interaction between the elements of traditional and online channels of sales and service for identifying the synergies. The article proposes the step-by-step model of establishing the organizational-economic relations in the system of multi-channel sales which facilitates the search and selection of elements to provide the synergy for increasing the potential value of the business. The first step of the model makes it possible to specify the channels of the studied economic sector, which are predisposed to interaction. The second step is aimed at brand image evaluation (with the help of mathematical methods and algorithms) in terms of each customer interaction channel. The third step generates the options for channel interaction, which are evaluated by rank. In the fourth step, on the basis of the conclusions made, the planning of territorial development of the retail network is carried out, in consideration of capacity restrictions imposed by the model. The fifth step of the model permits to determine the priority marketing companies for subsequent target investment. In the sixth step, the mechanisms are created for regulating and monitoring the economic relations in process of the multichannel system development. The further steps are oriented at formation of the working group for implementing the model and tracking the results of its implementation with their subsequent adjustment. Special attention is paid to the model of selecting the option for channel interaction, and to the algorithm of determining the concentration of retail outlets within the specified area

Key words: synergy, interaction, integration, intensification, multichannel nature, organization, compensators, intensifiers, online market, model, effect

MODELING THE PRODUCTION SYSTEMS

Sattarova K.T., Pronichev N.D.

THE AUDIT OF THE PRODUCTION ZONE OPERATION ON THE BASIS OF SIMULATION MODEL FUNCTIONING

The present article addresses the problem of modelling the production zone operation for obtaining data on equipment downtime and in-process queue. To check the output data of the created simulation model, the study of the production zone operation has been conducted using the snap reading method, the results of which were correlated with those of model operation. The results of investigation have demonstrated high accuracy of data obtained from functioning of the simulation model. We propose to use simulation modelling (particularly, the software environment «AnyLogic») for further analysis of the impact of input parameters on equipment downtime occurrence. This will help to reduce time for conducting the physical experiment on downtime data collection, improve the quality of administrative decisions, and develop measures for downtime reduction

Key words: snap reading, simulation model, equipment downtime

Parshin N.M., Kalistry N.A.

**THE CONTEMPORARY PROBLEMS OF SUPPLEMENTARY TRAINING
OF PERSONNEL AT INDUSTRIAL ENTERPRISES**

The continuous personnel training and development are key success factors for any organization. They play a special role at enterprises concerned with design and production. Such enterprises directly depend upon the level of staff creativity and their knowledge, because the output of such enterprises is result of creative engineering thought which directly impacts the competitiveness and novelty of the product. At present, many industrial enterprises are coming to the conclusion about the necessity for creating their own training programs. In the present article, the author emphasizes the aims and problems of workplace training of the engineering personnel, and analyzes the possible ways of such training, from cooperation of enterprises with supplementary educational centers (on the basis of a technical university) to establishing their own educational centers. The distinctive feature of this research is the detailed study of the work of the supplementary professional training centre, its main goals and objectives. The materials of the research can be helpful in further work on developing training programs and refresher courses for engineers at enterprises of the industrial cluster. The creation of the new enterprise-based training system and identification of the advanced methods of engineering personnel development are primary objectives of the author's research

Key words: engineering education, workplace education, personnel development, educational programs