

ABSTRACTS

THE THEORY AND METHODS OF PRODUCTION ORGANIZATION

**B.Yu. Serbinovskiy, A.A. Serbinovskaya, E.M. Plaksina,
INSTITUTIONAL ORGANIZATION OF PRODUCTION AND AUTOMATION
OF ECONOMIC ENTERPRISE MANAGEMENT**

At many large and medium-sized, geographically distributed enterprises having subdivisions in various regions of the country, the use of automated managing and information systems does not entail the desired increase in efficiency of industrial operation. As the results of practice analysis show, their successful implementation, operation and development must be linked with rational institutional organization of production.

It is advisable that the automation of information and managing processes in a complicated industrial system must be supported by formal and informal rules, the institutional tools and mechanisms of job management, the behaviour and the actions of the staff.

The article reviews the typical problems of inefficient functioning of automated information systems. The solutions of the problems have been proposed. The institutional production organization has been described. The logical frameworks have been presented, showing the impact of institutional production organization on efficiency of corporate industrial activity. The institutional solutions have been provided, which must be necessarily used for improving the technology, production organization, economic management and automated information system.

In improving the technology of automated information processing, the production organization and economic management is complemented by institutional organization of production. Such a systemic solution is new knowledge, experience, good practice and know-how, and it becomes a commercial product

Key words: industrial activity, industrial system, institutional production organization, automated information systems, economic management, advanced practices, know-how, commercial product

THE PRACTICE OF PRODUCTION ORGANIZATION

**G.Yu. Muraveva
THE COMPREHENSIVE APPROACH TO ESTIMATING THE PRODUCTION CYCLE
DURATION IN INDUSTRIES WITH NON-PIECE REGISTRATION OF OUTPUT
PRODUCTS**

The article includes the analysis of literary sources, and states that the issues of estimating the production cycle duration are fairly thoroughly studied only for industries where registration of output and semi-finished products is executed on a single-item basis. For these industries, the movement types have been described in detail, the formulas for calculating the processing time have been derived, and the recommendations for using specific types of movement have been given. As practice shows, the elaborated methodology cannot be applied at enterprises conducting the registration of output products in terms of length, weight, volume or area. At present, the estimation of production cycle duration at such enterprises is conducted in an approximate way, based on the experience of manufacturing similar products, which does not always permit to specify the deadline of order execution. In the article, the author proposes the comprehensive approach to specifying the time elements. The methodology has been developed for estimating the processing time, based on monitoring the duration of product manufacturing using output (master, pilot) equipment, and the account of time for manufacturing the transfer batches during the previous and following transitions

Key words: production cycle duration, processing time, the deadline of order execution, registration of products, transfer batch

R. S. Golov, V.V. Milnik, A.V. Milnik,

CHANGING THE HUMAN PROFESSIONAL FUNCTIONS UNDER THE IMPACT OF INTEGRATED AUTOMATED INDUSTRIAL PRODUCTION

The article studies the problems which are concerned with the impact of integrated automated production, based on creating corporate integrated automated information management systems (IAIMS), upon specialists and workers of an enterprise. Man-machine systems, created by applying such integrated structures, radically change the boundaries of professional competence and responsibility of the corporate personnel, automating a significant number of functions, previously performed by people. The mechanisms of functioning such systems are reviewed by authors on the basis of the developed principal concept of a man-machine system. One of the urgent needs of contemporary IAIMS is a more detailed workout of their organizational and engineering-psychological support. In the context of conducted research, particular attention is paid to issues related to change in functional impact upon an individual in the structure of such a system, so as to enhance the intellectual component of employees within the system

Key words: automation of production, cybernetics, integrated automated information management systems, man-machine system, ergatic systems

P. P. Lutovinov, Yu. N. Startcev,

QUALIFICATION - AND COMPETENCY-BASED CORPORATE PERSONNEL DEVELOPMENT

The processes of rapid development of information and communication technologies, import substitution and increasing scarcity of all major types of resources have demonstrated the insufficiency of qualification-based approach to corporate personnel development, demanding increased attention to such characteristics as expertise and competence. In fact, the concept of the crisis of qualification-based approach has emerged. Herein, competencies are found to be the compromise linking personal qualification with possibilities of its effective implementation in the environment through working functions of a particular employee, and also through the powers of using the available resources, which is urgent for the company advancing in the innovative way. In this regard, the article studies the connections between quality characteristics of an employee, namely, a «blank sheet», a qualified employee, a competent employee and a competency-based employee. It is demonstrated how a «blank sheet» is transformed into a qualified, and, then, into a competent and competency-based employee having comprehensive knowledge and skills for work in a specific area of responsibility. The main reason for such transformation has been indicated, namely, the impact of the environment. In fact, the algorithm of evolving a «blank sheet» into a competency-based employee has been presented

Key words: innovations, «blank sheet», qualification, competence, expertise, personnel development

O.V. Rybkina

THE DEVELOPMENT OF ORGANIZATIONAL MANAGEMENT STRUCTURES AT COMPANIES OF SCIENCE-BASED INDUSTRIAL SECTOR

The article considers the typology of organizational structures of modern enterprises, focused on the development and manufacture of high-tech products. It presents methodological principles and features of formation and development of multi-dimensional management structures, which are based on the cellular type of management organization, participatory organizational culture and flexible approach to implementation of strategic decisions. The multidimensional organizational structure does not ignore the principles of consumer focus, and the emergence of "internal" entrepreneurship, where each cell functions for a client, which is a member organization of the integrated structure. The

high-tech industrial enterprises encounter a number of problems in administrative decision-making, and the development of the theory and methodology of multidimensional management structures will eventually eliminate the restrictions hindering the effective economic activities in the framework of modern organizations

Key words: management structure; multidimensional organization; integrated production structure; science-based enterprise

O.G. Turovets, V.N. Rodionova

ON CERTAIN PROBLEMS OF ENSURING THE EFFECTIVE ORGANIZATION OF HIGH-TECH PRODUCTION

This article discusses the factors and conditions of efficiency of high-tech products. It substantiates the use of new methods and forms of production organization, such as the establishment of joint enterprises and integrated industries, the formation of industrial clusters and production systems, the enhancement of industrial and scientific production outsourcing. The paper reveals the feasibility of creating the transformational production systems, and increasing the organizational flexibility of high-tech production. The modular form of flexible production has been described. The article discloses the organizational tasks, aimed at increasing the efficiency of using the main production assets, the desirability of acquisition of automated and robotic equipment, taking account of organizational factors, and the provision of maximum equipment load based on improving the production planning. The paper emphasizes the need for training organizers and specialists in business management

Key words: high-tech production, organizational factors, integration, flexibility, production culture

THE ECONOMIC PROBLEMS OF PRODUCTION ORGANIZATION

E.V. Volkodavova, A.P. Zhabin

IMPORT SUBSTITUTION AS A FACTOR OF EFFICIENCY OF INDUSTRIAL CORPORATE ACTIVITY IN CONDITIONS OF INSTABLE ECONOMIC ENVIRONMENT

Since the spring of 2014, the Russian business entities have been suffering from the consequences of economic and political sanctions imposed by foreign countries. The Government of the Russian Federation faced the problem of development and implementation of import substitution policies.

The import substitution policies must help to overcome the critical dependence on foreign technologies and products in many sectors of the Russian economy, with account of implementing the international obligations, and from the standpoint of economic feasibility and efficiency of organizing the import substitution process.

In the article, the authors study the implementation of import substitution as a reserve for increasing the efficiency of industrial enterprise operation. The theoretical aspects of implementation of import substitution policies at a microlevel have been further developed. The presented methodological approach to building an algorithm of import substitution in the performance management system of the company at stages of production and implementation will help the managers of industrial enterprises to focus their efforts on revealing the reserves of its operating efficiency in the organization of import substitution

Key words: industrial enterprises, import substitution, efficiency of operation, costs, effect, the components subject to import substitution

**V.D. Kalachanov, A.N. Novikov, V.V. Kalachanov, N.N. Pronkin,
THE CRITERIA OF OPTIMAL MANAGEMENT OF FUNDING THE INDUSTRIAL
ACTIVITY OF HIGH-TECH INDUSTRIAL ENTERPRISES (AS EXEMPLIFIED
BY AIRCRAFT CONSTRUCTION)**

Broadening the range of sources and methods of funding the enterprise activity determines the relevance of the problem of developing the tools for making funding decisions, namely, the algorithms and economic-mathematical models of funding management.

A wide range of possible funding sources requires optimizing the choice of funding means. Not all methods of funding involve the cost specified by the interest rate. Therefore, there is a need for more sophisticated optimization criteria.

This paper proposes a new criterion of optimizing the funding of aircraft construction enterprises, that is, net present value of fund raising, based on analysis of the existing procedure of funding a number of high-tech industrial enterprises. The special formulas of net present value have been proposed for certain methods of industrial enterprise activity funding. The application of the proposed indicator and its special formulas for certain funding methods allows to minimize the costs of financial support for the production system of an aircraft-construction enterprise

Key words: funding, net value, funding structure, algorithm of control

**THE INNOVATION
PROCESS MANAGEMENT**

E.P. Enina

**THE RATIONALE FOR THE DEVELOPMENT OF INTEGRATED STRUCTURES IN
AEROSPACE INDUSTRY, BASED ON INNOVATIVE ACTIVITY**

The article presents the analysis of modern aerospace industry and explains the causes of such state, the fundamental of which is the methodology of management. It shows the necessity for transition to implementing the system of scientific substantiation for the development of integrated structures in aerospace industry, based on innovative activity. The forecast has been proposed for the development of integrated systems in aerospace industry, based on management system optimization. In the present paper, it is proposed to use a single evaluation index, which will help to determine the level of substantiation of the development of integrated structures in aerospace industry using appropriate optimization procedures.

A positive aspect of the proposed methodology is relative simplicity of calculations and the use of analytical and expert methods of investigation. In particular, the introduction of the most effective and fairly simple innovation technologies into aerospace production (i.e. the technical factor of stabilizing type) will allow to enhance the labour productivity and can reduce the unit cost

Key words: innovation activity, aerospace industry, integrated structure, optimization, management

S. V. Sviridova

**THE CREATION OF THE ORGANIZATIONAL-ECONOMIC MECHANISM FOR
IMPLEMENTING THE STRATEGY OF INNOVATIVE DEVELOPMENT
OF INDUSTRIAL ENTERPRISES**

The article defines the category of the organizational-economic mechanism for implementing the strategy of innovative development of industrial enterprises, emphasizing its main characteristics. It was determined that the mechanism is a set of organizational forms, economic methods, factors, conditions, processes and management structures which allows to implement the strategic innovative development of industrial enterprises most effectively. The scheme of the mechanism has been created. The elements of its support and their relationships have been specified. The paper highlights the objectives and results of mechanism operation, the objects and subjects of management, the

elements of support, the features of innovative development as well as the theoretical, methodological and practical tools of implementing the strategy of innovative development.

The structure of the executive subsystem of the organizational-economic mechanism has been worked out in relation to functioning of the innovative and production complex. The article highlights the main elements of the complex, its associated members and their roles in operation of the innovative development mechanism. The types of relationships within an executive subsystem have been specified and described. The ways have been proposed to introduce the mechanism of implementing the innovative development strategy into practical operation of an industrial enterprise

Key words: organizational-economic mechanism, innovative development strategy, strategy implementation, mechanism creation, industrial enterprises, innovative-industrial complexes

MARKETING AND DISTRIBUTION ORGANIZATION

Y.V. Kachina, V.V. Kachin and T.V. Shchegoleva

DISCUSSING GLOBAL CHALLENGES IN THE SUPPLY CHAIN

The article discusses major challenges that face suppliers and their procurement departments in the global environment today. Even though cost reductions and timely deliveries of goods and services across the global supply chains still represent their highest strategic priority, international corporations have started to pursue a holistic approach to developing their supply chains today. The holistic approach adds value to a corporate business strategy while representing a great challenge. Economic instability and political volatility have comprehended risk assessment. China and other developing countries also move towards the holistic business strategies that create precedents of more cost-attractive domestic sourcing. Global transparency prompts development of cross-cultural and intellectual diversity in the domestic procurement departments. Ethics and sustainability indicators have elevated in suppliers' performance evaluation. The prime discussion concerns green purchasing initiatives and trade-offs of being a supplier of high-tech companies

Key words: supply chain management, global integrated supply chain, global sourcing, procurement, holistic approach, cross-cultural diversity, sustainable procurement, green purchasing, supply chain risks

P. P. Krylatkov, M. A. Prilutskaya

THE ALGORITHMS OF FORMING THE OPTIMAL ORDER PORTFOLIO OF A MACHINE-CONSTRUCTION COMPANY

The article describes the problem of forming an optimal order portfolio of a machine-building enterprise with account of exogenous and endogenous factors. The paper presents the author's classification of tasks related to creation of the optimal order portfolio from the standpoint of the owner's operational approach to integrity of a machine-construction company. The proposed classification is the basis for formalised setting of a fairly representative class of tasks related to formation of the order portfolio and the development of algorithms for their optimal solution. The characteristics of the order portfolio have been specified which determine the requirements for integrity of a machine-construction company. The levels of company integrity are specified as conditions affecting the creation of the order portfolio. The substantial level of conditions for administrative decision-making has been characterized with reference to tasks at issue. Based on one of the classification criteria (that is, the state of productive integrity), three groups of problems have been singled out, which are related to formation of the optimal order. The given group of tasks has been formulated for setting (under conditions of permanent integrity of a machine-construction company). The article presents the developed algorithms for solving the problems of this group in conditions of certainty, risk and uncertainty

Key words: machine-construction company, order portfolio, the concept of company integrity, the owners' administrative approaches, risks, optimization, algorithms

QUALITY AND COMPETITIVENESS OF PRODUCTS

N.L. Volodina

THE PROCESSUAL APPROACH IN THE SYSTEM OF QUALITY MANAGEMENT

The principles of the quality management system have been studied, namely, customer focus, leadership, involvement of people, process approach, enhancement, evidence-based decision-making and relationship management. The peculiarities of the new version of the international standard ISO 9001:2015 have been highlighted. The application of the processual approach to the quality management system has been demonstrated by an example of the logistic process, using the concept of universal quality management, which permits to identify and satisfy the requirements of stakeholders in the logistical process. The elements of the logistical process have been singled out, namely, sources of «inputs», «inputs», performance, recipients of «outputs», methods and means of control, the distinctive feature of which is its adaptation to the quality management system. The article highlights the indicators of logistic process quality (procurement, sale, storage and transportation), which allow to assess the effectiveness and stability of logistic processes being implemented. The concepts of implementing the universal quality management requirements have been defined with reference to logistic processes

Key words: management, quality, system, process, logistics, indicators, standard

A. A. Demidenko, I.V. Omelchenko, D. I. Korshunov

THE AGGREGATED METHOD OF ANALYSIS AND INDUSTRIAL QUALITY CONTROL MANAGEMENT AS AN ALTERNATIVE TO «SEVEN TOOLS OF QUALITY CONTROL»

On the basis of analysis and comparison of «seven tools of monitoring product quality and production processes», the aggregated method has been proposed, which eliminates the shortcomings of existing approaches being used in isolation from each other. The aggregated method is based on three most successful tools, namely, Ishikawa diagrams, scatterings and Pareto method, integrating the most effective stages of each tool. The article presents the algorithm of applying the proposed method, and conducts the analysis of its advantages and disadvantages, based on evaluation criteria, which are typical for all tools of quality management. These are: the area of application; the method of data comparison; the goals, the way of data collection; sample size, the methods of data analysis and presentation; the form of analysis; variability and peculiarities of diagram plotting; the method of efficiency assessment; the way of checking the proper execution of the method. The proposed method can be universally applied in any situation, however, this statement must be verified in practice

Key words: quality management, methods of evaluation and quality management, the comparison of quality management methods, the efficiency analysis of quality management methods, the method of graphics, Ishikawa diagram, Pareto method, the diagram of scattering (dispersion), the method of histograms, the method of checklists, the method of control cards, the method of data separation