

# ECONOMICS AND MANAGEMENT OF ENTERPRISE

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## DEVELOPMENT OF THE METHOD OF SELECTING INNOVATIVE IDEAS FOR FOLLOWING COMMERCIALIZATION ON THE BASIS OF THE INNOVATIVE SUPERMARKET

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The object of research is innovative and investment processes at Ukrainian enterprises. One of the most problematic places is the presence of quite a few disparate approaches and methods for selecting and evaluating innovative ideas, it does not allow to agree on the parameters of the supply of innovations with the parameters of their demand and inhibits the processes of commercialization of science.

In the course of research, the composition of the evaluation criteria for selecting innovative ideas for further commercialization was justified. The methodology of the State Agency of Ukraine for Investments and Development was used as a basis. According to this methodology, the Competition Committee on the selection of innovative and investment projects to finance them at the expense of the State Innovative Financial and Credit Institution checks for compliance with the following criteria: scientific and technical, production, market, financial and economic, social and ecological.

In order to facilitate the comparative evaluation of innovative ideas at the stage of their pre-selection, it is proposed to carry out an integrated evaluation of ideas based on the generalization of single criteria for meeting the requirements of an innovative project in an integrated index. To increase the level of validity and objectivity of the results of the integrated evaluation, the authors developed a system of weight coefficients of single criteria for the correspondence of innovative ideas to the requirements of an innovative project:

– first, to obtain a weighted level of indicators, which are established by expert evaluation of the significance of the relevant indicators in the aggregated evaluation criterion;

– secondly, based on the weight of each criterion of the evaluation system, establish the overall level of compliance of the innovative project with the requests of experts from the innovative supermarket.

Based on the results of an expert evaluation of the relative importance of one criterion over others, a matrix of pairwise comparisons of the criteria of innovative projects was constructed at the stage of their pre-selection. The proposed weighting factors will ensure an increase in the accuracy of evaluation results and objectivity of management decisions taken on their basis.

The proposed methodology allows for a comprehensive evaluation of the compliance of submitted applications with the criteria for the practical implementation of an innovative supermarket.

**Keywords:** innovative supermarket, technique of selection of innovative ideas, evaluation criteria of selection of innovative ideas.

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## ANALYSIS OF SEAPORTS DEVELOPMENT STRATEGIES: SCIENCE, TECHNOLOGY, EDUCATION AND MARKETING

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The paper investigates the development of domestic and foreign seaports in conditions of growth of global competition, implementation of aggressive policies and strategies by competitors. The most problematic aspects in improving the performance of modern functions by seaports (integration, service, image) are: ignorance of interests of key stakeholders, insufficient use of all development factors, lack of understanding of global trends and competitive conditions for infrastructure development and its interconnections with land infrastructure; which are incorporated in strategies.

The research study of scientific and analytical works and strategies for seaports' development at the level of industry and enterprises, used methodology for constructing competitive map of global port market, systematization of factors and generalization of modern techniques for studying trends and features of seaports' development, and micro- and macroeconomic indicators of their activities.

As a result, the list of stakeholders of seaports' development was defined, a matrix of developmental factors was offered and competitive maps of world port market with positions of countries and ports were constructed. The analysis of competitive maps revealed significant asymmetries in dynamics and size of market segments of seaports and countries, which results from implementation of unique national, regional and local strategies. The key factor of their development is the active use of public-private partnerships, scientific and educational, technological and marketing factors. Global trends (containerization, ecologization and decentralization) are revealed and recommendations on key development indicators are proposed:

- revision of the role of the state;
- consideration of interests of stakeholders;
- deregulation;
- joining of systematic and individual approaches to each port;
- improving the quality of monitoring and developing interrelations with the scientific and educational systems;
- application of marketing tools. Their implementation in developmental strategies will improve efficiency of use of seaports in Ukraine and related industries.

**Keywords:** transport infrastructure, world port market, competitive market map, conditions of deregulation.

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**SUBSTANTIATION OF METHODOLOGICAL APPROACHES TO COST ESTIMATION OF INNOVATIVE TECHNOLOGIES**

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The object of research is the estimation of technologies developed in universities. One of the most aspects of implementing the transfer of innovative technologies from universities to the business environment in Ukraine is the lack of necessary and sufficient amount of methodological developments aimed at the effective cost estimation of technology. The existing developments are mainly of an industrial or local nature, are fragmentary. So, standing estimation is the basis for the successful commercialization of technologies and their market spread. Taking into account this, problem is scientifically and practically meaningful.

In the course of scientific work, current approaches and methods for the cost estimation of innovative technologies are considered. The regulatory and legal documents regulating the estimation of innovative technologies developed at universities have been analyzed. Refinement is a costly method of estimating the value of innovative technologies by justifying expressions for planning cost indicators and applying the proposed individual price indices. Advantages of the improved method for cost estimation of technology is a high level of accuracy in forecasting economic elements of costs as part of the cost of the facility. The explication of methods of cost estimation of technologies developed in universities, with methods of pricing is offered. Methodical explications can be used as a tool for making decisions about the appropriateness of starting a particular research or development work. The matrix of the ratio of the estimation indicators, price and profit is developed on the basis of explications of estimation and pricing methods.

This is the basis for development of other methods of economic estimation of technology.

The suggested methodical approaches allow to substantiate management decisions on development of technologies (from the stage of enrolling to the balance of universities to the stage of selecting a commercialization scenario, transfer and dissemination of these technologies on the market). And also to conduct effective strategic planning of the university's technological progress, etc.

**Keywords:** methods of economic estimation of technologies, methodical explications, transfer of innovative technologies, scientific and technical products.

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**THE ANALYSIS OF METHODOLOGICAL APPROACHES OF THE RISK ASSESSMENT ORGANIZATION**

page 34–40

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The object of research is methods of approach to risk assessment, each organization independently develops and implements. The author provides practically gained experience in an international company – an effective approach in the use of risk assessment methods.

One of the most problematic places is the choice of the method of assessing the organization's risks. The method is in primarily in the compatibility of the mission and the objectives of the organization, and a number of tasks with the selected methods of risk assessment. For a quantitative method of risk assessment, it is the availability of correctly calculated norms, according to which a risk analysis will be carried out. For a qualitative method of risk assessment, it is the availability of qualified experts with sufficient experience in the field of risk assessment. For a mixed method of risk assessment, it is compliance with the balance and appropriateness of use between a quantitative and qualitative method of risk assessment.

In accordance with the selected types of economic activity, organizations that require strict compliance with production standards, legislation, licensing, etc., it is advisable to use quantitative methods of risk assessment. As an example, the risks associated with violation of the norms: the rates of environmental tax for emissions of pollutants into the air, stationary sources of pollution; disposal of hazardous waste; control over water use and discharges of enterprises.

A mandatory creation of a risk map for each organization is proposed. This is due to the fact that all risks must be structured

and investigated, and a risk response method must be chosen for each of the risks. The risk map has a number of features and an important purpose in the corporate governance structure, in particular:

- risk matrix, or visualization for the top management of the organization;
- risk table, or working tool for risk management.

Risk assessment in any field is very important. Due to this, the company that invests in the improvement of the internal control system (ICS), in ICS support at a given level, subsequently receives effects in the form of savings, the absence of fines, and protection from corruption. As an example, protection against corruption provides timely detection of risks – red flags, which indicate possible manipulations.

**Keywords:** risk assessment, quantitative and qualitative analysis methods, choice of risk assessment method, result of risk assessment.

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# ECONOMIC CYBERNETICS

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## DETERMINATION OF THE ENVIRONMENTAL TAX ON THE BASIS OF MODIFIED INPUT-OUTPUT LEONTIEF-FORD MODEL

page 41–46

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The object of research is the planning of production activities, which aims to harmonize the environmental and economic criteria for the development of «nature-production». One of the most problematic places in production is environmental factor consideration, since production activity has a negative impact on the environment. The reduction of the greenhouse gases share in emissions from industrial enterprises is important particularly.

Approaches to production activity modeling on the basis of inter-industry balance with environmental component are used in the course of the study.

The modified ecology-economic Leontief-Ford model for the case of expanding of input-output balance taking into account the new branch that carries out the processing of greenhouse gases is analyzed in the paper. The proposed model has a feature that allows to consider the process of greenhouse gases eliminating as a separate branch of production, inextricably linked by inter-branch links with other industries.

Calculations based on real data of input-output balance for 2016 are carried out. An aggregated matrix of direct costs is formed with the allocation of 8 major branches.

This ensures the possibility of obtaining explicit formulas for finding or assessing the magnitude of the environmental tax, depending on the pollution of the technology. In the investigation Leontief-Ford model is redesigned to a static model of input-output balance by taking into account the emergence and functioning of a new industry – the destruction of greenhouse gases. As a result of new branch introduction the matrix of direct technological costs and the matrix of direct costs increments are obtained. The price of basic products and the cost of destroying pollutants are calculated. Compared to similar well-known models, it is possible to conclude that the proposed model provides benefits when calculating the charge for pollution. As a result, the formula for finding or estimating the value of environmental tax, depending on the contamination of the technology, is implemented. The introduction of a tax rate that takes into account the contamination of production will contribute to a more rational use of the environment and, accordingly, to reduce greenhouse gas emissions to the atmosphere.

**Keywords:** ecological-economic modelling, sustainable development, inter-industry balance, Leontief-Ford model, greenhouse gas emissions.

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## RESEARCH OF DEPLOYMENT MODELS OF CLOUD TECHNOLOGIES FOR BANKING INFORMATION SYSTEMS

page 47–52

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The object of research is banking information technology (IT). One of the most problematic issues is the low efficiency of using hardware resources and, as a result, high costs and time spent on maintaining and developing banking information systems (IS). The use of cloud technologies, especially with the use of the pub-

lic cloud deployment model, can greatly enhance the economic efficiency of banking IT. In addition, there is an increase in the availability, flexibility and scalability of banking IT, as well as the time to market, (TTM). In the course of the study, quantitative and qualitative indicators of the functioning of banking IS were used.

An analysis of modern approaches to building a service-oriented architecture of banking IS based on cloud technologies was conducted in scope of the research. The article describes the architectural solution of information technologies for the introduction of automated banking IS taking into account the requirements of the National Bank of Ukraine and European regulators. The analysis of the main banking systems and the expediency of using different models of cloud technologies deployment are analyzed.

The result obtained in quantitative parameters of the system load allows to find additional reserves for optimization of time processing of information and increase economic efficiency using the Public cloud. The greatest effect can be achieved by applying this model to the Core Banking System (CBS). In order to comply with the requirements and to take into account restrictions on the placement of client data, the article proposes a mechanism for depersonalization.

This ensures the possibility of obtaining the most optimal values of indicators. Compared to similar well-known services, such as virtualization, it benefits because there is no need to purchase, or lease hardware, and the computing power can be scaled in a much wider range.

**Keywords:** bank architecture, cloud technology, banking information systems, Core Banking System.

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#### OPTIMIZATION OF E-DOCUMENT WORKFLOW FOR ORDER CALCULATION

page 53–58

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The object of research is automated control systems at enterprises of the machine-building industry. One of the most problematic places is the calculation of the cost of an order in the presence of a large number of orders of various types, which is typical for modern enterprises. In the course of the research, an analysis of the systems for calculating the cost of an order is carried out and the features of the formation of the order are determined at machine-building enterprises. Ways of optimization of electronic document circulation by application of the concept of use of the automated calculation of cost of the order on the basis of formation of the data on separate production units or sets are offered. The concept of calculating the cost of using each production unit for manufacturing the order provides a flexible tool for the management of the company. This allows to create an unlimited number and variety of models of technological units in an automated control system, to supplement and improve parameters for a more accurate determination of the cost of production. To do this, use directories of operations that contain information about the necessary equipment, tools, supplies, the necessary skills of workers to fulfill the order, the cost of their work and the like. The next step is the modernization of the order generation algorithm, requiring the introduction of changes in the automated enterprise management system. The proposed concept of using automated calculation of the cost of an order based on the formation of data for individual production units or sets allows to significantly reduce the cost of maintaining the planning and economic department. When ordering documentation, an analysis of available consumables is conducted, the necessary information is sent to the procurement department, the necessary equipment is selected taking into account the loading of individual devices in a certain period of time. Also, the processing time for orders and the submission of commercial offers is reduced. This opens up new opportunities for the company to participate in tender proposals and to identify the optimal variant of the offer, instantly calculating several quality-price options for manufacturing products.

**Keywords:** e-document management, order calculation, enterprise of machine-building industry, automation of enterprise management, optimization of business processes.

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