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MIKE-FARMER MODEL ADJUSTMENT FOR RUSSIAN EQUITY MARKET

This article describes the implementation of Mike-Farmer model for imitation modeling of trading at financial markets. The mechanism of continuous order matching, operating at Moscow Exchange, was simulated. Research is based on detailed market data, which include Moscow Exchange order and transaction history. The conclusion made is that the model modification covers adequately the micro-structural characteristics of the Russian stock market.

Key words: zero intelligent model, market microstructure, stylized facts, order flow, Mike-Farmer model, order cancellation process, RTCI.

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**IMPROVEMENT OF INFRASTRUCTURE OF PRODUCT QUALITY
MANAGEMENT AT MACROECONOMIC LEVEL**

The relevance of the article is conditioned by the fact that a state gives up to solve the issues related to providing high-quality production. Nevertheless, there are other ways but market laws the national economy can rely on when managing quality of domestic production. Business is unable to conduct necessary researches independently, to establish standards and to provide their compatibility. On the contrary, the experience of the developed countries demonstrates that the government should induce business to enterprises' technological reorganization, take the outdated equipment out of service on a regular basis, impose higher technological standards of efficiency, energy saving and environmental friendliness on business that will improve the domestic production quality.

The article describes main ways of product quality control infrastructure improvement at macroeconomic level. The ways of standard and legal basis improvement in the area of production quality, lines of consulting development when controlling product quality, methods of Russian competitive programs improvement in the area of quality and information and staff acquisition for product quality control were suggested in the article. The abstract and logical methods were used.

Key words: infrastructure, quality management, information support, information and staff acquisition, quality of production.

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INNOVATIVE CLIMATE FORMING FACTORS IN SYSTEM OF HIGHER EDUCATION

The article discusses the formation of the innovative climate in the system of higher education. Major objectives include the analysis of basic factors, influencing the formation of the innovative climate, and the study of such categories as innovative potential and innovative risk.

The method of factor analysis was used to research the issue. Macroeconomic, investment, innovation, consumer, intelligent and infrastructure factors form higher education innovative potential. Innovation risk is a quality characteristic, which assesses the probability of loss and its profitability.

Legislation, political, economic, social and financial risks were considered in relation to higher education. The innovation climate in the higher education system will enable to take the staff training, educational content and quality requirements to a new scientific level at the market of educational services.

Key words: *innovative climate, innovation potential, system of higher education.*

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ON BASIC PRINCIPLES OF INDUSTRIAL ENTERPRISES TRANSITION TO SUSTAINABLE DEVELOPMENT IN CONDITIONS OF RATIONAL AND IRRATIONAL EXPECTATIONS

The transition to industrial enterprises' sustainable development in the context of rational and irrational expectations demands strategy formulation that considers the nature of the expected changes in public life, in technological systems, in economy, in technical-economic, intellectual and social capabilities which provide balance of economic, environmental and social spheres and satisfy the present and future generations' social needs.

The article considers the directions and principles for the development under discussion. According to the research industrial enterprises sustainable development in the context of rational and irrational expectations can be evaluated with a two-section structure of general and specific principles. The conclusion made is that the sustainable and long-term business development is an evolution process when the exploitation of resources, the investment pattern, the goals of technological development, and institutional changes conform with the current and future needs. The development involves some constraints on the exploitation of natural resources.

The question arises: how to ensure the development, facing motivation of individuals with limited rationality and opportunistic behaviour; overcoming the arbitrariness and subjectivity of individuals' value statements as well as environmental and individuals' irrationality and inconsistency between public interest and individual utility functions and when there are standard views that serve the methodological individualism? "

Principles of sustainability affect the formation of enterprises' organizational structures that use the innovation-oriented, strategic-based operational methods for industrial enterprises' sustainable development management in the context of rational and irrational expectations. The expectations are characterized as complex, heterogeneous and dynamic systems. The industrial enterprises' specific activity should be legal and economic. The enterprises should envisage social, ecological and ethical effects as well as acceptable biospheric changes.

Key words: *rationality, irrationality, principles, the individual, outcome.*

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MONITORING AS LABOUR DEMAND EVALUATION TOOL (ON THE EXAMPLE OF THE ULYANOVSK REGION)

Mobility and unsustainability of social and economic indices, numerous imbalances at the modern labour market resulted in the necessity to make regular and comprehensive assessment of a labor demand. The article predicts recruitment needs for the period 2013–2015 relying on the labor demand data monitoring, conducted in the Ulyanovsk region.

According to the research the number of employees in 2015, compared with 2011 will increase in agriculture, hunting and forestry, in manufacturing, public administration and defense, social security, in fisheries and aquaculture, mining, construction, wholesale and retail trade, repair of motor vehicles, motorcycles, household goods and personal items will remain at the same levels. Other types of economic activity will face a decline in employment.

The labor market of the Ulyanovsk region expects redistribution of labour resources within economic activities. However, labour demands of the Ulyanovsk district is unlikely to be satisfied in full.

Key words: *monitoring, demand, work, manpower, workers.*

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DEVELOPMENT OF ECOTOURISM AS FACTOR OF COMPETITIVENESS GROWTH IN TYUL'GAN DISTRICT

Tyul'gan district has officially registered twenty-seven natural monuments, nine of them are regionally recognized. However, when we analyze numerous reference sources, concerning the issues of tourism development in the Orenburg region for the next few years, the conclusion made is that Tyul'gan district isn't currently a touristic priority area. 90% of all the monuments are in the started state. Environmental constituent is a bottleneck that reduces the competitiveness of the district. The development and implementation of a detailed and clear ecotourism program in the Orenburg region will encourage the conditions for ecotourism growth.

Key words: *area competitiveness, area competitiveness factors, ecotourism, Tyul'gan district.*

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AGRICULTURAL ORGANIZATION FINANCIAL ANALYSIS TO DETERMINE BANKRUPTCY RISK

The article considers the issue of determining insolvency on the basis of financial accounting. The conditions, that determine the agricultural organizations' bankruptcy risk, were generalized and systematized. External conditions of business activity such as agricultural production cost development, insufficient state support of manufacturers, work with the life forms and natural and climatic conditions, that can result in financial insolvency, were studied in the article.

Quality and quantity criteria determine in-home bankruptcy risk conditions. The interrelation between quality and quantity criteria for determination of financial insolvency was substantiated. Financial accounting generalizes current statistics which was changed due to specific economic operations and managerial decisions. The article describes the influence of agricultural business management on financial accounting indices and suggests supplementing agricultural organizations' accounting liquidity evaluation by studying balance sheet account changes that make first three classes of accounting liquidity. The string value changes are considered in the context of managerial decisions. Interpretation of possible bankruptcy risks is suggested.

The article considers the liquidity and solvency indices of eleven agricultural organizations of the Orenburg region. Timely decisions, concerning money flow optimization, construction of reciprocal payment system with debtors, smart sales of product strategy development, will enable agricultural producers to reduce bankruptcy risk.

Key words: *financial statements, financial status analysis, bankruptcy risk, insolvency criteria, financial stability.*

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THEORETICAL ASPECT OF MANAGERIAL DECISION-MAKING FOR SUSTAINABLE DEVELOPMENT OF ENERGY COMPANIES IN CONTEXT OF UNCERTAINTY AND RISK

The article considers theoretical and methodological foundations for management of energy company sustainable development and its long-term success and competitiveness in a modern world. The methodological basis for the managerial decision-making efficiency improvement in the context of uncertainty and risk was researched. The risk factors when making managerial decisions under uncertainty were systematized.

Key words: *energy companies, sustainable economic development, decision-making under uncertainty, risk factors for energy companies.*

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**IMPROVEMENT OF FOREIGN ECONOMIC ACTIVITY EFFICIENCY
ANALYSIS FOR MESOSCALE SOCIAL AND ECONOMIC SYSTEMS**

The constituent units of the Russian Federation can be conditionally called “mini-states”. Terms of trade index, gross-trade condition index, income terms of trade index can be applied for evaluation of foreign trade terms. Chain price index of export and import on each product group, foreign trade performance indicators were calculated on the example of the Kursk region.

Calculation data enable to identify the most profitable product group for the Kursk foreign trade, that needs investments: these are engines and electric generators.

Key words: foreign economic activity, competitiveness, external turnover, terms of trade index, chain index, index of gross-trade term.

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FACTORS INFLUENCING HOTEL BUSINESS COMPETITIVENESS

The article considers main approaches to the definition of “competitiveness”. Basic competitive factors, that determine the hotel business ability to operate in current financial, economic and political conditions, are identified.

Key words: competition, competitive, competitive factors, hotel business.

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CURRENT STATE OF TAJIKISTAN BANKING SYSTEM IN CONTEXT OF WORLD ECONOMY UNCERTAINTY

Banking system and the economy of the Republic of Tajikistan is at the formation level, that's why there are a lot of problems and their solution results in the development of a banking system and economy. Long-term monetary policy uncertainty, low monetization level, banking instability are referred to current problems. The article considers that the National bank of Tajikistan plays an important role in solving these problems. The article suggests the measures that enable to develop the banking system and encourage macroeconomic stabilization and country economy development.

Key words: Banking system, monetary policy, monetary units, economy monetization level, mortgage.

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INNOVATION ACTIVITY INVESTMENT METHOD FOR HOUSING AND UTILITY SERVICE

Housing and utility business is one of the most important sectors in modern economy. The researchers from different countries treat its efficient development and functioning as an important objective for consideration. Current reality creates conditions that demand for innovation transformations. In its turn the innovation development needs clear investment policy that can provide necessary resources.

The studies in the area of housing and utility business innovation development and investment security enable to suggest the investment program into innovation activity.

The investment activity stepwise algorithm makes up the main point of the program. The algorithm sets and analyzes the problem and suggests the solution at the following levels: identification of a subject and an object of investment activity, the research of investment opportunities, development of technical and economic foundation and choice of optimum investment project, analysis of investment activity, the sign of a contract.

The method, enabling to encourage investments into housing and utility business innovation activity and to set up positive economic relations, was suggested.

Key words: investments, innovation, housing and utility business, innovation project, investment structure.

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**METHODOLOGICAL BASES OF THE STRATEGIC ANALYSIS
INNOVATIVE ACTIVITY OF THE INDUSTRIAL ENTERPRISES**

Under conditions of external factors high turbulence and toughening competition at the commodity markets the only strategic alternative of an enterprise sustainable development is its innovation growth. The innovative activity strategic analysis is an initial stage of strategy formation, that provides identification of enterprise innovative activity targets.

The goal of the article is the development of methodological background for the strategic analysis of the innovative activity, including the principles, approaches and research methods.

The article suggests the following methodological principles as the most important ones for the innovative activity strategic analysis: the principle of stakeholders' interests combination in the course of innovative development; principle of innovative potential, efficiency and competitive advantages interconnection; the principle of innovative potential research in the context of world economic tendencies; the principle of enterprise's innovative strategy adaptation to environmental conditions; principle of flexibility. The methodological principles enable to perform the strategic analysis of the enterprise innovative activity and to outline the lines for future development.

Resource, system, comprehensive and dynamic approaches are the main methodological approaches for the strategic analysis of the innovative development lines.

The choice of strategic analysis methods for enterprise innovative activity is based on these methodological principles and approaches. The article considers the most popular methods and tools of the strategic analysis (SWOT analysis, the portfolio analysis, a benchmarking, the gap-analysis) and evaluates their application potential when making the strategic choice of the enterprise innovative development lines.

The conclusion made is that the theory and practice of the innovative activity strategic analysis suggest a complex of various methods and tools. Intricate market dynamic, legislative framework variability and domestic resources deficiency make the enterprises apply the complex of strategic analysis methods that enable to get the comprehensive idea about their strategic environment and strategic options of innovative development.

Key words: *strategic analysis, innovations, innovative strategy, SWOT analysis, portfolio analysis.*

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**UNIVERSITY INTERNAL TRANSFORMATION AS INNOVATIVE
EDUCATION SYSTEM (ON THE EXAMPLE OF ENERGY FACULTY
CASE STUDY IN IRKUTSK STATE TECHNICAL UNIVERSITY)**

The article describes a functional model of University transformation, suggested by B. Clark and substantiates the idea that modern monitoring, analytical and control tools for internal processes that would encourage innovation transformation of both university and its units, are necessary to form the university group as innovation system nucleus.

The model explains the university evolution from the traditional to entrepreneurial (innovative) one.

The transformation processes analysis findings for the Energy Faculty of Irkutsk State Technical University are suggested. An adapted Clark's model with the monitoring results of five model elements: the core, the periphery, funding basis, academic units, entrepreneurial environment is considered. The model enables to analyze the faculty transformation and interaction of elements.

Key words: *transformation of the university, Clark's model, innovative university, entrepreneurial university.*

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NATIONAL INNOVATION SYSTEM MANAGEMENT IN MODERN CONDITIONS

Social and economic growth of a country and its residents' life quality improvement are encouraged by innovation activity. Taking into consideration that new technologies facilitate the economic efficiency growth due to the rational use of available resources and production of goods with brand new consumer characteristics, the issue of national innovation systems shaping-up and development is becoming relevant in modern studies.

The proceedings of the Russian and foreign scientists in the area of innovation development and innovations management, institutional and neo-institutional economics form the basis for the research. When studying the issue the author applied the ideas of the management theory and the theory of systems and used general scientific methods, including analysis and synthesis and logical modeling.

Having revised the scientific literature on the problem in focus, the author studied conceptual framework for national innovation systems formation and development. Considering the evolution of scientific ideas and applying the institutional theory framework into the paradigm of national innovation system development, the article substantiated the thesis that inadequate institutional architecture and poor quality of institutions result in "non-innovation" production factors dominance in value added, primary sector of economy development and low strategic competitiveness.

The conclusion made is that the current national innovation system is the complex of interacting subsystems that generate, propagate and implement ideas, knowledge, know-how, including realized ones in innovative products. The technological leadership requires maximum effort in generating the set of institutions which are able to synchronize all innovation process participants' interests as well as to link the interests with global innovation trends.

Key words: *innovations, research and development, national innovation system, innovations management, postindustrial society.*

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**HOW TO BRING CHEMICAL INDUSTRY PLANTS UP-TO-DATE
(ON THE EXAMPLE OF CHEMICAL ENTERPRISES OF VOLZHSKIY
OF THE VOLGAGRAD REGION)**

Competitiveness of modern industrial enterprises depends largely on the fixed production assets utilization efficiency. Currently they have a high degree of moral and physical depreciation that drop major economic indicators of the enterprise. Modernization is one of the ways to improve the efficiency of fixed production assets. The article specifies the concept "modernization" due to analysis of different viewpoints.

Modernization is considered as an innovation-oriented process aimed at improving the facility, adapting it to new requirements and standards, technical specifications and quality indicators. Enterprises of many industries need modernization. The article studies the modernization processes at the chemical industry plants in the Volgograd region and suggests the basic modernization lines such as the technical re-equipment of existing plants and the establishment of new cost-effective and environmentally safe production businesses, the development of export potential and internal chemical markets, the implementation of innovation ideas.

Key words: *modernization, basic production assets, chemical industry.*

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ASSESSMENT MODEL OF MUNICIPAL HOUSING AND UTILITY SERVICE DEVELOPMENT AT MODERN STAGE

The problem of an unbiased and sequential assessment of municipal entities' development lines in the housing-and-utility area arouses a great interest on the part of authorities and residents. The compliance of strategic objectives of a housing and communal municipal unit with the officially accepted lines of development determines units' capacity to take part in federal and regional programs, to receive additional financial resources, to create the clear relations between the subjects.

The main goal of the research is the development of the assessment model for the municipal housing and utility services' lines of growth. The goal sets the following objectives:

- to generalize and systematize scientific data on municipal economic development;*
- to reveal characteristics of housing and utility planning processes in municipal units of the Russian Federation;*
- to develop and describe the assessment model for municipal housing and utility services growth as exemplified in Orenburg municipal units.*

Analytical and generalization methods as well as analogy and comparison methods were used while researching.

The main finding of the research is the complete methodological background that enables to carry out an assessment of development of municipal housing utility services.

Key words: *model, directions of development of housing and communal services of municipality, reform.*

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**US-RUSSIAN INVESTMENT COOPERATION AT REGIONAL LEVEL
(AS EXEMPLIFIED IN SAMARA REGION)**

The article studies the experience of the US-Russian economic cooperation at a regional level (as exemplified in the Samara region). In the 1990s the pro-active work of the regional government and private interest of businessmen attracted such significant investors as General Motors Company, Pepsi, Packard Electric Company. Against the complicated political relationships between Russia and the USA the economic cooperation with American business stopped to be one of the priorities for the regional government.

After 2006 the inflow of direct American investments was considerably reduced and the spheres of mass communications and software became the priority directions for investments. According to the author it should be considered as a negative tendency. However, the potential of bilateral investment cooperation at regional level isn't identified. It largely depends on regional government willingness to move back to traditional forms of work with the US business community.

Key words: foreign investments, US-Russian cooperation.

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FORMALIZATION OF CONTROL ALGORITHMS FOR MULTI-THREADED ACCESS TO SHARED RESOURCES BASED ON EVENTIVE NONDETERMINISTIC FINITE AUTOMATA

Importance is attached to formal methods of describing algorithms for parallel control processes in information and control systems since they provide solution to problems in designing and analysis of complicated control systems. Formal methods provide the solution to issues concerning the control over asynchronous processes and resources in multiprocessor and distributed systems.

A model of event nondeterministic automata (ENDA), which have several advantages was suggested as a mathematical apparatus. First, the models of ENDA are distinguished by significant simplicity and compactability since the properties are described in terms of private events implemented in the control systems, their quantity will be significantly less than the quantity of equivalent deterministic automata states. Secondly, the use of models ENDA provides ample opportunity to describe complex control algorithms for parallel processes and resources. The basis of such models is a graph which vertices are identified with certain events and arcs – with connections between these events.

The article considers the formalization of access to shared critical resources using a rendezvous mechanism in multi-threaded parallel processing. The suggested approach to the use of algorithms control formal descriptions provides simulation of multiple parallel streams with several critical resources, and enables easy transition from formal analytical representation to the software or hardware implementation of control algorithm, which ultimately will improve the reliability and performance of information systems.

Key words: *non-deterministic automata, parallel processes, critical resource.*

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DEVELOPMENT OF REGIONAL INFORMATION AND CONSULTING SYSTEM IN MUNICIPAL DISTRICTS OF ORENBURG REGION

Development and implementation of information-communicative technologies in municipal districts are currently relevant. The article suggests solving the issues with the help of information-consultative system, which organizational model is presented in the article as well. According to the model the information and consulting centres are based in the districts of priority implementation and their branches – in neighbouring districts. The article identifies public significance of the project and efficiency of cross-coupling between municipal socio-industrial sphere of the districts and information and consulting system.

Key words: *information-consulting system, municipal district, information technologies.*

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APPLICATION OF SCIENTIFIC TREATMENT METHODS IN HOSPITALS OF SOUTHERN URALS (1941–1945)

The war medical experience involving scientific treatment methods is currently becoming relevant as the military conflicts worldwide cause wounds and death to a lot of people.

The Great Patriotic War (1941 – 1945) emergency hospitals saw a stream of the wounded. The hospitals lacked medical products and equipment, bandage material as the Soviet industry was working for the defense needs at that moment. The development and implementation of new efficient drugs and equipment became the priority goal for medical researchers. Despite difficulties of that period doctors of the Southern Urals kept doing clinical research, that's why central and local hospital boards in the USSR system of the people's Commissariat for Healthcare played the essential managerial role. Advanced treatment techniques were applied in the hospitals with the support of university researchers of the Southern Urals. Such methods as paraffin treatment, hydrotherapy, physiotherapy, work therapy, resort treatment hastened wounds recovery. The blood transfusion control played a special part. The development of scarce medical products and bandaging materials substitutes was of defense importance.

In liaison with medical researchers local industry mastered the production of vitally important pharmaceuticals.

Thus due to the doctors and medical researchers of the Southern Ural the treatment time reduced, surgical activity increased and the substantial proportion of Soviet army soldiers recovered and returned to the military service.

Key words: scarce medication substitute, treatment methods, wounded, emergency hospital, Southern Urals.

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SPECIAL RAD-HARD FIBER-OPTICS CHANNEL

The article suggests the overview of issues concerning the radiation protection of fiber-optic channels for information-measuring systems and sensors, used in ionizing radiation areas. The influence of ionizing radiation on fiber guides, fiber guide radiation hardening due to reversible radiation-induced absorption bleaching, irreversible laser emission-induced absorption fiber photobleaching as well as mathematical modeling of fiber heating by radiation protection laser emission were considered. The article suggests the research findings on fiber guide heating process control when heating is due to protecting laser emission as well as findings on fiber guide radial resistance, identifying power capability of protecting laser emission.

Key words: radiation, defense, fiber guide production technology, laser emission, fiber guide heating control when heating is due to protecting laser emission, fiber guide beam strength.
