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# ECONOMICS AND BUSINESS

## TOTAL QUALITY CUSTOMER SATISFACTION MODEL

Jesús Cruz Álvarez<sup>1</sup>, Jesús Fabián López<sup>2</sup>, Carlos Monge Perry<sup>3</sup>

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**Abstract:** In today's business environment, all organizations are required to focus on their customers in order to fully understand their needs. There is a need to drive and engage strategic actions in order to close any potentials gaps between customer's expectations and manufacture's deliverables. Current customer satisfaction theory appears to be excluded from a holistic model that broadly covers the extent of customer satisfaction concept.

This article empathizes the need of an integrated customer satisfaction model that the organization can use as a strategic platform to increase sales, business performance, branding, market share, and customer loyalty, based on specific methodology that translates customer needs into a reliable business plan.

**JEL Classification Numbers:** L1, L2, M1

**UDC Classification:** 330.1

**Keywords:** voice of the customer, customer satisfaction, manufacturing excellence, total quality management, TQM, TQCSM

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## KNOWLEDGE MANAGEMENT IN INDUSTRY CLUSTERS AS AN INDICATION OF ENTREPRENEURSHIP

Bogusław Bembenek<sup>1</sup>, Teresa Piecuch<sup>2</sup>

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**Abstract:** The article emphasizes the fact that industry clusters, as organisations, composing of various subsystems through mutual cooperation, are able to successfully attain the established objectives. Their capability to work efficiently is determined, however, by the quantity and quality of the knowledge they possess.

Knowledge, as a component of intellectual capital, is currently the key strategic resource of clusters. Even more crucial is the way in which a manager of a cluster achieves, processes, transfers, and protects the knowledge. Assuming that knowledge management influences the results of a cluster, the article determines the significance of this process, and indicates the need for ceaseless development.

**JEL Classification Numbers:** L26, M2, O15, O33, O34

**Keywords:** management, resources, knowledge, cluster, partnership, entrepreneurship, development

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## MANUFACTURING AND CONTINUOUS IMPROVEMENT AREAS USING PARTIAL LEAST SQUARE PATH MODELING WITH MULTIPLE REGRESSION COMPARISON

Carlos Monge<sup>1</sup>, Jesús Cruz Álvarez<sup>2</sup>, Jesús Fabián López<sup>3</sup>

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**Abstract:** Structural equation modeling (SEM) has traditionally been deployed in areas of marketing, consumer satisfaction and preferences, human behavior, and recently in strategic planning. These areas are considered their niches; however, there is a remarkable tendency in empirical research studies that indicate a more diversified use of the technique.

This paper shows the application of structural equation modeling using partial least square (PLS-SEM), in areas of manufacturing, quality, continuous improvement, operational efficiency, and environmental responsibility in Mexico's medium and large manufacturing plants, while using a small sample ( $n = 40$ ). The results obtained from the PLS-SEM model application mentioned, are highly positive, relevant, and statistically significant. Also shown in this paper, for purposes of validity, reliability, and statistical power confirmation of PLS-SEM, is a comparative analysis against multiple regression showing very similar results to those obtained by PLS-SEM. This fact validates the use of PLS-SEM in areas of untraditional scientific research, and suggests and invites the use of the technique in diversified fields of the scientific research.

**JEL Classification Numbers:** C12, C18, C39

**Keywords:** structural equations modeling, multiple partial least squares, PLS, SEM

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## A NEW METHODOLOGY ON STRATEGIC PLANNING

Hakan Bütüner<sup>1</sup>

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**Abstract:** A systematic method of strategic planning is anticipated to be easily understood and straightforward; based on fundamentals; and to be universally applicable for any type of business. Accordingly, this methodology is generated for the purpose of assembling the disconnected and disorderly ideas, processes, and techniques (written on strategy and business development) under the same roof, in order to develop a systematic methodology that is easily understandable and applicable.

As many sources exhort managers to “think strategically” or prescribe “strategic leadership” to helicopter out of tactical day-to-day management, only a few address how to make this happen. Where strategic analysis tools are explained, this is most frequently done conceptually rather than practically on how to utilize the tools for strategic planning. Moreover, as fondly as it may sound, there is an exact approach or systematic thinking on this issue; our intention is to bring in a new perspective to the reader and, more significantly, to provide a different benefit by the application of this systematic methodology.

Systematic strategic planning (SSP) consists of a framework of phases through which each project passes, a pattern of procedures for straight-forward planning, and the fundamentals involved in any strategic planning project.

**JEL Classification Number:** M10

**Keywords:** systematic, strategy, planning, strategic planning, business plan

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## MANAGEMENT OF FOREIGN DIRECT INVESTMENT IN TERMS OF ITS REGIONAL LOCALIZATION IN SLOVAKIA

Rastislav Kotulič<sup>1</sup>, Peter Adamišin<sup>2</sup>, Ivana Kravčáková Vozárová<sup>3</sup>

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**Abstract:** The phenomenon of globalization had resulted in strengthening of the international capital movement in the 1990s, which led to an intensive retraction of small and open economies into the globalization process. The foreign direct investment (FDI) has since gained its importance, especially in the area of local and regional development. Its positive impact is reflected at the local, as well as at the national level. FDI is the means of ensuring technology transfer, increasing employment, as well as improving the quality of the workforce.

The aim of this article is to assess the stock of foreign direct investment and its localization in the Slovak regions at NUTS III level. From the content perspective, the article analyzes the economic development of the Slovak region by region, based on the stock of FDI, by using models from neoclassical theory of regional development for the period from 1999 to 2009. We assumed that the different regional stock of foreign direct investment would have a significant impact on the economic differentiation of the regions in the Slovak Republic. This analysis confirmed our assumption.

**JEL Classification Numbers:** F21, R15, R58

**Keywords:** foreign direct investment, FDI, economic growth, NUTS III region, Slovakia

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## MANAGEMENT OF SPECIAL FOOD PRODUCT – AN OPPORTUNITY FOR MARKET EXPANSION IN THE REGION AND EUROPEAN FOOD MARKET

Mirjana Nedović<sup>1</sup>, Lovro Babić<sup>2</sup>

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**Abstract:** This research is based on conducted surveys with potential consumers of a food product called “kulen” a Slavonian traditional dry fermented salami, as an indigenous Croatian product, covering two counties (Osiječko-Baranjska and Vukovarsko-Srijemska). The surveys include the manufacturer’s attitude toward the special traditional product kulen, their place in the market, strengths, and weaknesses. The aim of this paper is to analyze the market for kulen food products, based on consumers’ responses and their willingness to purchase the product. The results showed that in the two counties, most consumers purchase salami once a week from a Croatian market—a crucial indicator for consumption of quality products.

With Croatia’s accession to the European Union, Croatian manufacturers have found themselves within the unified European market. This primarily means an expanding market where they can sell more of their products. However, the entry of new producers into the Croatian market would also increase competition. In such case, some manufacturers will have to lower the price of their products to become more competitive, while those whose products have unique geographical indications, designations of origin, and traditional specialty would certainly be able to set a higher price for their products.

**JEL Classification Numbers:** L11, Q13

**Keywords:** kulen, Slavonian, Croatia, European Union, management, market performance, food production

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## CONDITIONS OF INVESTMENT DECISION-MAKING IN AREA OF RFID TECHNOLOGY

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**Abstract:** The application of the electronic product code (EPC) in an enterprise may turn out to be one of the choices in the future. The subject of this article is an analysis preceding decisive conditions in an investment process of its implementation. These reflections are preceded by the research in Polish enterprises, aiming at an estimation of the possibility of the RFID (Radio Frequency IDentification) transponder commercialisation (market potential) being consistent with the EPC requirements. Conducting such research in the future will lead to a decrease in the decision gap among managers within the scope of the possibility of implementing the innovative solution described, as well as the anticipated business results. Methods of analysis and synthesis have been applied, within the theory of decision-making and telecommunications. An interdisciplinary approach to the issue in question constitutes the added value of this article.

The conclusion comprises a synthesis of the article contents—crucial decisive areas that require monitoring and simultaneous estimation (now and in the future) regarding implementation of the electronic product code in an organization. In general, these areas are macro environment, competitive environment, strategic potential of an organization, and managers' decisiveness.

**JEL Classification Number:** D81

**UDC Classification:** 005.33

**Keywords:** decision-making, decisiveness, EPC, risk management, RFID, semi-passive transponder

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## INSTITUTIONAL PROBLEMS OF FINANCIAL CAPITAL MOBILIZATION IN MODERN RUSSIAN ECONOMY

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**Abstract:** This article views the mechanism and modern forms of financial capital mobilization in risky and uncertain conditions of the economic environment. From the perspective of the institutional approach, there is a group of problems typical for two different financial capital mobilization models: the bank loans market and the stock market. It reveals some contradictions of capital mobilization mechanism through bank lending by a critical assessment of subjective and purely subject-object relations; the major participant currently is the State. The features of the process of investing in a portfolio of securities in the current environment of high volatility of systematic and specific nature are defined, which ultimately determine the need to revise the prerequisites of classical portfolio theory and the development of new algorithms for redistribution of capital.

Solving the problem of the role of the State in the financial capital mobilization will allow the mechanism to adjust itself in the direction of growth in bank lending instruments. Simultaneously, there is an increase in the growth rate in the real sector of the Russian economy. The proposed mathematical apparatus of fuzzy set theory, based on uncertainty factors variety of the economic system being considered, is capable of minimizing the portfolio investment risk.

**JEL Classification Numbers:** A11, C40, G1

**UDC Classification:** 336.7

**Keywords:** capital, mobilization, financial risk, fuzzy set theory, institutional approach, portfolio theory, Russian economy

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## OPPORTUNISM AND EFFICIENCY OF CONTRACTUAL RELATIONS IN RUSSIAN CORPORATIONS

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**Abstract:** Issues related to research of the corporate sector efficiency are extremely important because it is the corporations, which act as a nucleus of almost any economic system. Efficiency of the corporations is largely due to internal corporate quality interactions, i.e. the level of contractual relations efficiency. In the existing economic literature, the questions of contractual relations efficiency still lack sufficient investigation. The present article examines the efficiency of the contractual relations and the factors affecting it, as well as problems of opportunism in Russian corporations and its impact on the contractual relations efficiency. In the graphic models presented, the efficiency curves of contractual relations and opportunism are described; the major factors that reduce the contractual relations efficiency in corporations are highlighted. The article examines the impact on the contractual relations efficiency of quality of corporate institutes. The basic corporate institutes and their key features are allocated. A quantitative analysis of the contractual relations efficiency, by building production functions of Cobb-Douglas, is conducted; this analysis introduces indicators characterizing the dividend policy and the level of remuneration for management personnel as factors.

**JEL Classification Numbers:** D02, D23, D86

**Keywords:** corporation, contractual relations, efficiency, opportunism, corporate institute, institutional environment.

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## ANALYSIS OF VALUE ADDED DISTRIBUTION AND LEVEL OF TRANSACTION COSTS IN THE RUSSIAN CORPORATIONS

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**Abstract:** Modern understanding of the corporation as an integrated system driven by a common goal of profit maximization has brought both economic theory and management practices to a deadlock. Incorrect understanding of the modern corporation's core, as well as inability to adequately assess them, became one of the causes of the global economic crisis. One of the promising "reanimation" options of the modern firm theory is the institutional approach. However, this approach is in dire need of measurable operational criteria and indicators that would tie business practices together with their basic theoretical categories: institute, contract, and transaction costs.

The scope of this paper is to offer and demonstrate the possibilities of testing methodology for assessing the corporation as an institutional unit of an economic system. To do so, we propose a new approach in the assessment of institutional compliance of the corporations with the expectations of their major subjects. It is based on estimating the distribution of the gross added value between the subjects. Moreover, the technique of assessing the level of transaction costs in corporations, based on data accounting, is proposed. The methods were tested on examples of real Russian metallurgical industry corporations as reported between 2003 and 2012. The presence of a statistically significant negative connection between the share of value added revenue and level of transaction costs, as well as between the share of value added at the owners disposal and the transaction costs level, was established. The presence of a statistically significant positive connection between the level of transaction costs and share of value added, at the disposal of workers, was established.

**JEL Classification Numbers:** D52, D23, L25

**Keywords:** corporation, economic crisis, institutional theory, institutionalism, transaction costs, value added distribution

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## CHANGES IN INTERNATIONAL BUSINESS FORMS IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

Stela Zhivkova<sup>1</sup>

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**Abstract:** Nowadays, sustainable development is much discussed and is regarded as a very important issue. It is all around us, in every part of our everyday life. It inevitably leads to changes in the economic and social behavior of every country even though these changes in the different economic areas are not well explored yet. Highlighting and identifying them, specifically in the field of international business operations, lead to development and implementation of a scientific research project called “Global challenges in the environment protection and changes in the international business.” The research interest was focused on studying the changes in the international business operations in the context of environmental protection on the basis of two specific environmental pollutants—waste and greenhouse gas emissions. The main methods used were reviews and analysis of literature in the field of sustainable development and international business, critical analysis of the EU policies for waste minimization and climate change mitigation, practical experience, and experts’ opinion.

The project results showed that in sustainable development conditions, new economic activities emerge such as bio-trade, production of bio-goods, and consultancy services on environmental issues. Some well-known activities, such as public procurement or public-private partnership, are getting green. In the field of international business, the modifications are related to, for example, development of additional supply chain called “waste chain,” import and export of pollutants, such as waste and emissions, etc. It turns out that most of these changes are a result of the numerous measures taken by the institutions on national and international level to stimulate a sustainable way of work. In this article, only a few of them are briefly discussed.

**JEL Classification Numbers:** F23, Q01, Q53

**Keywords:** international business, sustainable development, environment, waste, greenhouse gas emissions

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## FRANCHISE EXPECTATIONS: CASE OF KAZAKHSTAN

Raissa Kaziyeva<sup>1</sup>

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**Abstract:** The purpose of the article is to provide a critical review of franchising development in Kazakhstan by focusing on the relationship between the franchisor and the franchisee. We have conducted extensive research and communicated with lots of potential and existing Kazakhstani franchisors and franchisees, operating since 2003. Our findings show that the process of signing franchising agreements is quite challenging in Kazakhstan. Thorough investigation of the differences between expectations and actual responsibilities from both two sides of franchising agreement allows us to overcome misconception and eliminate the aspirations of automatic success.

This article attempts to give practical implications for franchising development in Kazakhstan that will raise the effectiveness and enhance the credibility of franchising business through preliminary screening of subjective assumptions regarding franchising advantages and benefits, using a cross-comparative analysis, as well as provide recommendation to add addenda and clarifications to the agreement as necessary.

**JEL Classification Number:** L26

**Keywords:** entrepreneurship, franchising agreement, expectations, obligations, negotiations, franchisee, franchisor, Kazakhstan

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## CONSUMER ETHNOCENTRISM AND CONSUMER ASSOCIATIONS WITH SLOVAK BRANDS

Lucia Vilčeková<sup>1</sup>

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**Abstract:** This paper describes the perception of Slovak consumers toward domestic and foreign brands and examines their associations with Slovak brands. The introduction to country of origin in marketing is provided, followed by a brief description of consumer ethnocentrism and consumer animosity; then description of research methodology is mentioned; and finally, research results are presented.

The representative research was conducted in 2013 over a sample of 1,067 Slovak consumers over the age of 16. To capture the spontaneous reactions to Slovak brands, the respondents were asked to name what comes to their mind when they hear the expression “Slovak brand.” Slovak consumers associate domestic brands with quality, tradition, fair prices, and Slovakia. Their primary feelings toward Slovak brands are mostly positive. If they have negative perception, that is only because domestic products are not often available in stores and there is a lack of Slovak brands. Moreover, the consumers were presented with a list of 27 statements concerning their attitude toward domestic and foreign brands and their brand buying behavior. Based on the research results, Slovak consumers can be observed as very brand-oriented and often possess a strong brand loyalty when making purchasing decisions. Slovak consumers are not necessarily patriotic as far as purchasing is concerned. The main reason for buying Slovak products is only to support the economy and the Slovak consumers are very aware of the benefits of supporting domestic production. Nevertheless, consumer ethnocentrism is not typical for Slovaks.

**JEL Classification Number:** M310

**Keywords:** brand loyalty, consumer ethnocentrism, domestic brands, economic crisis, foreign brands, globalization, Slovak consumers

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## DO LITHUANIAN HIGHER EDUCATION ACCOUNTING PROGRAMS REFLECT ACCOUNTING HARMONIZATION IN THE EU?

Dalia Kaupelyte<sup>1</sup>, Renata Legenzova<sup>2</sup>

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**Abstract:** Financial accounting is undergoing major changes in the EU and worldwide. Great efforts are placed on adoption of high quality accounting standards for listed companies, public sector organizations as well as small and medium business entities. Being a member of the EU Lithuania is in compliance with the EU incentives in de jure accounting harmonization; however de facto situation in Lithuania is not adequately assessed. One of accounting harmonization related questions is whether Lithuanian higher education provides labor market with market-needs oriented accounting professionals.

The objective of this article is to assess if Lithuanian higher education programs in accounting field is in compliance with EU accounting harmonization outcomes. We analyze if graduates of Accounting programs from Lithuanian Higher Education Institutions are trained to work with different sets of accounting standards—International Financial Reporting Standards (IFRS) and Public Sector Accounting Standards that were adopted in Lithuania as a part of accounting harmonization incentives. To conduct an assessment of research methods by case analysis, comparative analysis has been deployed. We assessed programs goals, learning outcomes and course curriculum of Professional Bachelor, Bachelor and Master level programs in Lithuanian universities and colleges.

Results of the research revealed that de jure accounting harmonization is reflected in Lithuanian higher education Accounting programs. Accounting for listed companies (required to use International Financial Reporting Standards) is given little importance in Lithuanian Accounting programs. According to the analysis of the learning outcomes, graduates of the Accounting programs in Lithuania have a broad profile, but would not be able to work independently with International Financial Reporting Standards. On the other hand, even if regulation of public sector accounting was enforced later, it is included in number of analyzed programs. A number of Professional Bachelor's programs even offer specialization in this area. Results of the research allow us to conclude that colleges have their niche in preparing accounting specialist for local labor market and their positioning is relatively strong, concerning public sector accounting. Meanwhile first and second level universities' programs could be strengthened toward international accounting to provide labor market with professionals in this area.

**JEL Classification Numbers:** A22, A23, M41

**Keywords:** accounting harmonization, accounting programs, higher education, IFRS, Public Sector Accounting Standards, Lithuania

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## THE IMPACT OF RESEARCH AND DEVELOPMENT EXPENDITURES ON INNOVATION PERFORMANCE AND ECONOMIC GROWTH OF THE COUNTRY—THE EMPIRICAL EVIDENCE

Ján Huňady<sup>1</sup>, Marta Orviská<sup>2</sup>

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**Abstract:** The main aim of this article is to empirically verify the relationship between research and development (R&D) expenditures, innovation, and economic growth. Based on the correlation analysis, we examine the interdependencies between selected indicators. We have found that countries with an increase in innovation performance over the past years mostly experienced a higher economic growth in the year 2012. Countries with higher research and development expenditures have not only more researchers, but as well more patents registration. Subsequently, the relationship between R&D expenditures and economic growth is examined based on econometric regression model of the panel data. Input data used in the regression covers EU countries between the years 1999 and 2011. Our results suggest the existence of positive effect of lagged R&D expenditures on economic growth in these countries. We have also identified positive impact of the flow of foreign direct investment (FDI) in this model, which could be related to mechanism of technology diffusion across the countries.

**JEL Classification Numbers:** O30, O31, O33

**Keywords:** research and development, R&D, expenditures, economic growth, innovation

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## MODELING MARKET RISK IN FRONTIER EQUITY MARKETS—EVIDENCE FROM SERBIA

Marko Milojević<sup>1</sup>, Ivica Terzić<sup>2</sup>

**Abstract:** The need for understanding financial risk management and unique models for measuring risk in transitional capital markets increasingly gains in importance and becomes a very current issue. This article studies predictive ability of various classes of Value-at-Risk (VaR) models focusing on Serbian equity market in both stressed and normal market conditions. The five VaR models adopted in our evaluation procedure include: historical simulation with rolling window of 500 days, Risk Metrics, exponentially-weighted moving average (EWMA) with optimized decay factor, VaR based on models from GARCH family under three distributional assumptions (normal, generalized error, and Student-t), and Filtered historical simulation. In order to verify the forecasting performance of different VaR models, we employ a backtesting procedure, which consists of statistical tests. The results indicate that VaR based on conditional volatility models with asymmetric distribution of innovations behave reasonably well in both tranquil and crisis period. Standard VaR models developed for liquid and efficient markets seriously underestimate risk forecast in Serbian equity market under all circumstances.

**JEL Classification Numbers:** G17, G32, C53

**Keywords:** market risk, backtesting, forecasting, equity, EWMA, GARCH, VaR

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## ROMANIAN ACHIEVEMENTS IN PETROLEUM INDUSTRY

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**Abstract:** Petroleum has been and still remains, in equal measure, a friend and an enemy to humanity: a friend for its use in numerous applications over the years, from the lubrication of cart axles to jet fuel; an enemy for creating permanent conflicts between countries, leading to a global conflagration. This layout has perpetuated for over two millennia, until today.

The problem of petroleum has a multitude of aspects: economic, political, financial, social, military, legislative and, last but not least, scientific and technical. It has taken a share of sacrifices, which may not be overlooked, to be rightfully called “black gold.” Subject to continuous development, petroleum is still indispensable to our quotidian life, although attempts have been made to replace it with alternative energy sources due to its negative effects on the planet, which are increasingly visible.

The present state of petroleum industry is the result of a continuous labor of many generations of researchers, professors, engineers, technicians, foremen, and workers, especially from petroleum producing countries. Romania is one of the first petroleum producers and ranked first in Europe and among the first nations worldwide until the end of the 19<sup>th</sup> century. During the 20<sup>th</sup> century, a large number of oil and gas reservoirs were discovered in many countries on all continents; even today Romania still remains an important producer with encouraging perspectives.

Romanian contributions to the progress of petroleum industry are noticeable, being appreciated and implemented by the major companies worldwide. This work intends to present just several of these contributions, some of which are highlighted and highly regarded.

**UDC Classification:** 94:355.823 2(498) (075)

**Keywords:** petroleum, black oil, oil production, oil well, oil processing, petrochemistry

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## EUROPEAN FUNDS MANAGEMENT ANALYSIS—A CASE STUDY OF EUROPEAN SOCIAL FUNDS IN ROMANIA FROM 2007 TO 2013

Tiberiu Foris<sup>1</sup>, Diana Foris<sup>2</sup>

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**Abstract:** This article focuses on fund financing management of one of the utmost important European Union funds, the European Social Fund (ESF), and its implementation in Romania in its post adherence period (2007-2013). In this respect, the main aspects regarding the management and implementation of this program in Romania, as compared to other European countries, are analyzed taking into consideration the declared objectives at its launching moment. Through a defective management, these objectives have not reached their target, whereas the educational market of continuous adult education has been strongly distorted from the competitive point of view. Moreover, due to inadequate financial management, many of the involved agencies—private companies, schools, constitutive parts of the civil society, have gone bankrupted—the fact that would lead to a serious social imbalance.

The research part of this article, being implied in the management of the most important strategic projects of this program (projects in qualifications for the spa tourism, agro-tourism, and food industry), presents a critical point of view on ESF management at a national level and highlights a set of proposals and recommendations, so that, between 2014 and 2020, Romania should be aligned with the European standards regarding the performance in implementing programs with non-reimbursable financing.

**JEL Classification Numbers:** M53, O15, H52

**UDC Classification:** 377

**Keywords:** European social funds, management, tourism, strategies, Life-long learning, Human Resources, Romania

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## COINTEGRATION ANALYSIS OF THE FOREIGN EXCHANGE RATE PAIRS

Mária Bohdalová<sup>1</sup>, Michal Greguš<sup>2</sup>

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**Abstract:** Due to certain economic factors, Hungary and Poland—the two Central European (CE) countries—have not successfully adopted the Euro currency. We aim to investigate the dependency of the two CE currencies, HUF and PLZ, against the USD and the linking mechanism between them. Cointegration analysis is commonly used as a common econometric technique for evaluating such efficiency.

In this article, we discuss the cointegration analysis of the selected foreign exchange (FX) rate pairs. Using bivariate error correction model (ECM), we investigate spot FX rate pairs of HUF/USD and PLZ/USD. The results from ECM are used in impulse response model for prediction of the new equilibrium after the exogenous shocks affecting the processes at time  $t$ .

We have found that HUF reacts more closely with the change in USD and that HUF and PLZ are very unlikely to be cointegrated. Nonetheless, we have found the period when both spot exchange rates are weekly cointegrated, which was after August 2011. Although contributions are low, the analytical results are still statistically significant for other researches to be conducted with fractal analysis of these FX rates.

**JEL Classification Numbers:** C01, G17, C15, G30, G11

**Keywords:** cointegration, ECM, FX rates, impulse response model

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SOCIAL SCIENCES



## THE IMPORTANCE OF INTERNAL DIRECTIVES OF THE UNIVERSITY FOR THE INTELLECTUAL PROPERTY PROTECTION

Andrea Čorejová<sup>1</sup>, Jana Jarošová<sup>2</sup>

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**Abstract:** In this paper, we investigate the management system for intellectual property (IP) within the Center for Technology Transfer (CTT) currently operating in the University Science Park—organizational unit of the University of Žilina. The CTT deals with procedural issues: acquisition of intellectual property rights, IP protection, and IP commercialization. In solving selected issues involving the Internal Directive's content regulating the IP protection and commercialization in CTT of the University of Žilina, we are using available information and knowledge of the directives from both domestic and international universities.

This investigation helps the CTT in formulating more effective directive contents for University Science Park in Žilina. The entire system of research and development funding through projects requires accurate and complex monitoring of the use of allocated funds for various activities and persons. For internal usage, it is necessary to obtain discreet evidence that would allow accurate identification of funding received directly from IP creation-related projects.

**JEL Classification Numbers:** I25, M41, O3

**Keywords:** commercialization, copyright, intellectual property, higher education, internal directives, patent protection, technology transfer, university.

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## PROFESSIONAL DEVELOPMENT AS A MOTIVATOR OF GENERATION Y

Krystyna Kmiotek<sup>1</sup>

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**Abstract:** Along with Generation Y entering the market place, the human resources specialists have selected significant generation differences. The generations vary in values, expectations, approach to work, supervisors, and organization. These differences are very important for human resources management improvement as well as the motivation system in a company. The existing survey shows that Generation Y greatly appreciates the possibilities of professional development at work and it is important inducement for young employees.

The aim of the article is to identify the approach of Polish Generation Y to their professional development and confirm that companies have to offer suitable conditions for professional development to attract and maintain the biggest talents. Based on the questionnaire survey conducted among generation Y employees, we attempt to answer the following questions: “is the possibility of professional development the most important motivator?” “Could the lack of the company support for professional development be the reason for giving up the job?” “How does Generation Y take care of their own professional development?” The research shows that the possibility of professional development is not the most important motivation factor for Polish generation Y; this is because they value family, personal relations, and time for their passions or relaxation more. In fact, these factors are more valuable for Generation Y than money and work.

Furthermore, for young employees the lack of support in professional development by the organization is an important aspect that could cause them to leave the organization. Despite good preparation for work, generation Y employees still pursue further education, while working, in order to enhance their professional development. Human resource management practice in Polish companies should consider these conclusions under the scope of motivation system and talent management.

**JEL Classification Numbers:** M5, J53

**Keywords:** Generation Y, motivation, human resources, management, professional development

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## EDUCATIONAL POLICIES FOR PROVIDING THE QUALITY OF LIFE

Marina Liga<sup>1</sup>, Tatiana Voronchenko<sup>2</sup>, Yelena Zakharova<sup>3</sup>

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**Abstract:** Quality of life is an essential parameter to consider when society and its members are concerned. Education can become crucial in assessing social progress and quality of life. Thus, quality of life, as an indicator of any country's educational system and its efficiency, becomes an instrument for implementing educational policies both for social and personal development. Further, quality of life, a person's satisfaction with his or her life activity, is determined mostly by the state of the educational system and by conditions created for a person's development and realization of talents. Our research question is "what is considered to be qualitative, material or morality? Culture-centric or universal?"

This article aims to address the problem using systemic, structural, functional, and cultural approaches. Systemic approach helps to reveal the integral character of the studied phenomenon—quality of life. The approach, based on cultural study, helps to ground the culture-centric educational principle as a mechanism to provide adequate quality of life in contemporary society. Functional and structural approach helps to investigate the function of education and its role in the society. The change from technogenic civilization toward quality-of-life civilization requires a new perspective, which is capable of not only an adaptation to existing reality, but also of an ability to improve upon it. People who can achieve this become representatives of a new social group—meritocracy. Culture-centric educational principle is one of the ways to build up a new educational paradigm in order to prepare young people for a contemporary society.

**JEL Classification Numbers:** I2, I21

**UDC Classification:** 3, 37

**Keywords:** education, quality of life, society, values, assessment, subjectivity, culture-centric

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## DOCTRINAL BASICS OF THE LEGAL TECHNIQUE: COMPARATIVE ANALYSIS WITHIN THE EUROPEAN LEGAL FRAMEWORK

Alexander Malko<sup>1</sup>, Margarita Kostenko<sup>2</sup>

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**Abstract:** The legal technique was initially developed as a kind of “interpreter” for the legislative will in the legal language using a specific ingenuity of legal engineering. Historically, the theoretical base of the legal technique was formed on a phased basis, essentially stimulated by state reforms, social transformations, and active legislation systematization. It should be mentioned here that legal technique is a distinctive category reflecting the political, economic, and legal situation in the historical period of a certain state development, but being extra-national in itself.

The resource harmonization of the legal technique within the European legal framework means norm-setting regulations, coordination, and elaboration of common recommendations for the European countries. The cooperation in the legal technique standards harmonization will require the all-European cooperation to the new level as far as legal standards, human rights, democratic development, legitimacy and cultural cooperation are concerned.

**UDC Classification:** 340.13

**Keywords:** legal technique, integration, legal system, norm-setting, regulations

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## CREATIVE WORK UNDER COGNITIVE CAPITALISM CONDITIONS

Viktor Barhatov<sup>1</sup>, Yuner Kapkaev<sup>2</sup>, Oleg Dyachenko<sup>3</sup>

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**Abstract:** The transformation of production relations, which we have all witnessed during the last 20 years, has shown outdated existing theoretical approaches toward an understanding of the economy. The search for alternative ways of the economic development involves representatives of various scientific fields: post industrialism, information economy, sustainable economic development, new economy and others. Of particular interest is the concept of cognitive capitalism, which allows us to consider the transformation occurring “inside” of capitalism. This article proposes an approach to the study of the cognitive capitalism nature from the perspective of the Marxian theory, productive forces of society, and psychology. Methodological framework used has revealed contradictions of existing liberal-capitalist vector of development and the innovation-oriented economic formation. This is based on the exploitation of economic agent’s creative work. The technique, which allows us to assess the involvement of management in cognitive capitalism, is provided.

**JEL Classification Numbers:** O 100, P 590

**Keywords:** cognitive capitalism, creativity, creative thinking, labor, non-material production, intellectual production, ideas, creative potential

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## **PRESERVATION AND DEVELOPMENT WITHIN THE NATURAL AND SOCIAL EVOLUTION**

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**Abstract:** Investigation of the social evolution process and its differences from the natural evolution requires methodological substantiation. This article proposes a methodological approach based on the Hegelian dialectics. We distinguish two types of development: development based on external premises and development based on own foundation (self-development). The dialectics of preservation and change shows itself differently among these types.

Social evolution is a new branch of the global evolution; its motion vector is directed toward big changes and acceleration. At the same time, the speed of natural evolution remains slow. Emerging “scissors” create tension between the human’s natural and social sides. Natural evolution requires a person to perform the preservation functions, while social evolution requires changing functions.

**UDC Classification:** 101

**Keywords:** social evolution, dialectics, identity, difference, preservation, changing, development

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## BIOETHICS IN TRANSDISCIPLINARY AND INTERDISCIPLINARY CONTEXT OF POST-NONCLASSICAL SCIENCE

Vikotoriya Zasukhina<sup>1</sup>

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**Abstract:** Bioethics is an offspring of the post-nonclassical science. The subject of this research is its genesis and development in interdisciplinary and transdisciplinary space of the existence of modern philosophical-scientific thought. The direction of analysis is chosen by the author led to some inferences. Foremost, we will point out that anthropological turn in science is one of the main factors, which have created bioethical interdisciplinarity and transdisciplinarity. The aforementioned bioethics characteristics created the possibility of the complex solution for this science's problems. Philosophical and ethical concepts and methods had played very important role in bioethics formation as a new form of scientific cognition. At the same time, bioethics enriches and upgrades classical philosophy with new interpretations of fundamental philosophical problems. Bioethics formed in interdisciplinary and transdisciplinary context of modern science is the life axiology.

In order to find axiological importance of bioethics, we have decided to identify links and relationships within bioethics as a whole system. We constructed the bioethics concept as an interdisciplinary and transdisciplinary study of the moral and social problems caused by development of modern biomedical technologies. We then used this concept to form such philosophical-scientific comprehension paradigm of a problem of axiological justification of human life and health in the modern world, which assumes cooperation between representatives of different disciplines, and expansion of scientific outlook—its exit from a scientific radius.

**UDC Classification:** 17.022

**Keywords:** Bioethics, transdisciplinarity, interdisciplinarity, post-nonclassical science, life axiology, value

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## THE INFLUENCING FACTORS OF CHINESE MYTHOLOGICAL IMAGE CONSTRUCTION AND REPRODUCTION IN THE TRANSBAIKAL REGION

Artem Zhukov<sup>1</sup>

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**Abstract:** This article presents an investigation of the mass mentality, which exists under the influence of the Russian-Chinese transboundary relation within the territory of Transbaikalia. We have also investigated the peculiarities in the perception, of the Transbaikal population within this region, regarding the image of China and its culture. This research defines the essence of such notions as, “mentality of Transbaikal citizens” and “mythological image.”

The objective of this research is to conduct a complex study of the phenomenal mythology, with respect to China, in the territory of Transbaikalia. We have identified five major factors influencing the construction and reproduction of the Chinese mythological images. As a result of this work, we have come to a conclusion that the phenomenon known as “cultural boundaries of China,” which acted as a barrier, also served as a melting pot for different cultures and languages, thereby forming the most active zone for Chinese myth creation.

**UDC Classification:** 39 (571.54/55) (075.3)

**Keywords:** mentality, perception, mythological image, cultural boundaries, Russian, Chinese, transboundary relation, Transbaikal region

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## FORMAL DECENTRALIZATION OF LOCAL GOVERNANCE IN ALBANIA

Roland Lami<sup>1</sup>

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**Abstract:** This article presents an argument on the regional effects of migration on Albanian administrative-territorial reform and its consolidation. Many researchers of local politics support the thesis that an important demographic change is accompanied by a change related to the quality of service at local governance level. Compare to the Western and Eastern European countries, only in the early 1960s, Albania witnessed the introduction of the first regional and urban strategies. The strategy was used to limit the expansion of large towns and to encourage the development of small and medium-sized towns. Furthermore, there are a limited number of case studies based on migration data at regional level. This is why territorial reforms should often reflect ongoing demographic changes to minimize the effects caused by overpopulation, or significant reduction of the number of population in a local unit, with respect to quality of service offered to the citizens. We discuss the research question of “how will the demographic development, i.e. natural development of population as well as internal migration, affect different types of Albanian regions?” as well as “what is the impact of demographic movements on the quality of local governance?”

Based on the interpretation of some regional units, i.e. Tirana, Durrës, and Fier, it is confirmed that the demographic movements in the last twenty years in Albania have brought about some changes. In some local units, the number of inhabitants is significantly reduced, while some other local units are overpopulated. This new reality leads to implications in economic, social and cultural aspects; and most importantly, we noticed an increasing dependency of local government on the central government. We further claim that local and regional authorities must participate in accordance with the “partnership” principle. Under these conditions, it is necessary to plan a new territorial division.

**UDC Classification:** 617.7

**Keywords:** decentralization, territorial reform, demographic development, local government, central government

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## TRANSITIONAL PARADIGM AS AN EXPLANATION FOR THE DEMOCRATIZATION PROCESSES

Gerti Sqapi<sup>1</sup>

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**Abstract:** Over the last quarter of the century, the transitional paradigm (or the approach of the transition) has been a dominant paradigm that has greatly influenced different studies on democratization. The purpose of this paper, in a general perspective, is to conduct an analysis of the transitional paradigm, assumptions, key concepts, and hypotheses developed thereof, in order to evaluate the validity or at least be able to understand and explain the processes of democratization wave that affected third world countries. Development of literature and studies within the conceptual framework of this paradigm was mainly conducted during the period of what is known as “the third wave of democratization.” Explanation and direction of change from autocratic to democratic regimes, evident in those countries affected by the third wave, were the main claim of the transition approach. This paper attempts to investigate the validity of the conceptual framework of this approach with respect to the interpretation (and change of directions) of the democratization processes in these countries.

**UDC Classification:** 328

**Keywords:** democratization, transitional paradigm, conceptual stretch, consolidation, regime, structural conditions

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## DEVELOPMENT OF FOREIGN LANGUAGE PROFICIENCY ASSESSMENT AND CONTROL METHODS IN HETEROGENIOUS GROUPS OF ADULT LEARNERS IN FURTHER EDUCATION AS A TOOL TO INCREASE STUDENTS' MOTIVATION

Maria Vladimirovna Zarudnaya<sup>1</sup>, Oksana Ivanovna Barsova<sup>2</sup>

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**Abstract:** The educational system in the Russia provides opportunities for life-long learning, which presupposes availability of studying foreign languages at every stage, including further education (MBA and Presidential Program). Although adult learners realize the importance and necessity of mastering a foreign language, they might lack motivation due to a number of factors, such as different sociocultural backgrounds, social status, lifestyle, and knowledge of the foreign language. We have conducted research in order to analyze existing problems and develop a system of tasks to control and assess progress in a foreign language (English) proficiency in heterogeneous groups of adult learners. The developed approach to designing assessment materials is aimed not only at controlling students' progress, but also at increasing their motivation.

**UDC Classification:** 374

**Keywords:** adult, foreign language, higher education, heterogeneous, assessment, motivation

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## EVOLUTION OF LEGISLATION ON ADOPTION OF CHILDREN IN THE RUSSIAN FEDERATION

Oksana Petyukova<sup>1</sup>

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**Abstract:** This article discusses the development of legislation on adoption of children in the Russian Federation. Results were obtained from the analysis, in the historical and modern aspects, of the legislation on adoption of children that allows us identify the problems associated with the regulations on the children-orphans adoption in the family.

The results of the court statistics demonstrated that almost every second child adopted by Russian citizens is returned to authorized guardianship bodies. However, adoption of children by foreign citizens or non-resident persons shall be allowed only in the cases of absolute impossibility in granting adoption to permanent residents of the Russian Federation or to the children's relatives.

The article formulates the improvement tendencies in the adoption legislation of the children: creating a system for an open adoption, simplifying adoption establishment procedures, improving mechanisms in legal, organizational, and psychological support of Russian citizens intending to adopt children.

The results will be useful for those who are interested in the process of adoption, lawyers, representatives of the guardianship, and family members.

**UDC Classification:** 347.6

**Keywords:** adoption, legislation, children, law

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## THE EMPIRICAL DATA COLLECTION AND PROCESSING AS A FACTOR OF RESEARCH ACTIVITY EFFECTIVENESS

Nadejda Ogienko<sup>1</sup>, Anastasia Kim<sup>2</sup>

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**Abstract:** A modern scientific development cannot be imagined without the use of a statistical methodology, which is based on the empirical research. So, it is necessary for social and economic development of the whole society. The level of young scientists' ability to conduct the empirical research can be considered as a quality factor of their future research activities.

The preliminary analysis of young Kazakh scientists' works showed very little applicability of systems and technology use for the processing of statistical data. The objective is to determine the main critical points in the empirical research that cause the most trouble in the applicability of the statistical research methods, systems and data processing technologies for the writing of Undergraduate level final qualifying works.

The analysis of existing empirical data processing technologies and their level of accessibility to university students was made in order to address this problem. The investigation was conducted among Undergraduate courses across 56 departments in different directions, the main reasons were identified and the analysis of possible ways to overcome the causes was made. An example of a particular case decision and simplification of the empirical data processing is also presented in the research findings.

**UDC Classification:** 311.2

**Keywords:** research work, innovative development, empirical data

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## **MEDIA DISCOURSE IN THE CONTEXT OF VALUES STUDY**

Tatiana Prisyazhnyuk<sup>1</sup>, Elena Zilova<sup>2</sup>

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**Abstract:** In the study of mass communication, there has been much debate as to what extent the media can influence the audience. Instead of merely reviewing existing findings in the field, this article aims at searching for some new aspects to the problem. Previously, the study of Media Discourse was mainly restricted to the role of the media in the context of political or social sphere. This research offers to study the issue within a broader multidisciplinary framework involving such macrostructures as society, the mass media, language, and cognition.

The primary objective of the research is to define Media Discourse in the context of the study of values representation. The methods employed in the research are: discourse analysis, linguo-cognitive modeling, componential analysis, and contrastive linguo-cultural analysis. Modern Russian and British media texts were randomly selected for analysis building a corpus of 200 items. In connection with Media Discourse, at least three types of values should be distinguished: discourse values or discourse qualities; values endemic to a particular society, and broadcast by the media in order to cultivate national identity; specific media values generated by certain media, which in many instances can be viewed as “anti-values.” The research findings claim that this trend can be observed both in the Russian and British Media Discourse.

**UDC Classification:** 81'42

**Keywords:** Media Discourse, fundamental values, national values, transformation of values, anti-values

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## INTERNATIONAL MONETARY FUND AND ITS IMPACT ON IDEOLOGICAL STRUCTURING OF POLITICAL PARTIES

Roland Lami<sup>1</sup>

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**Abstract:** One of the institutions that has played a very important role in the post-communist period in Albania, is the International Monetary Fund (IMF). For pragmatic reasons or for guaranteeing their legitimacy, political parties have found it indispensable to cooperate with this institution. But, if we consider the role of the IMF from ideological perspectives, we would find that regardless of which party was in power (Socialist Party or Democratic Party) the respective government still has to follow its instructions and recommendations of a neoliberal nature. This behavior has prevented political parties, especially those of the left wing, to get structured from the perspective of ideological profile. For this reason, the entire discussion is mainly focused on the left-wing political perspective, as the principles of the right wing are closer to the IMF's neoliberal philosophy, from the ideological standpoint.

**UDC Classification:** 617.7

**Keywords:** ideology, IMF, standard reforms, political parties, neoliberalism

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## REGULATION OF THE ASYMMETRY IN SPATIAL SOCIAL AND ECONOMIC DEVELOPMENT OF THE WEST KAZAKHSTAN REGION

Eduard Imashev<sup>1</sup>

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**Abstract:** Based on the research results, the scientific work indicates economic trends and issues in the territorial organization of the economy and population of West Kazakhstan region. Analysis of the spatial development in the economic sphere has shown that there is a territorial localization of the productive forces in the north of West Kazakhstan region. The typology of the West Kazakhstan administrative districts was formed according to their level and pace of socioeconomic and environmental development, from 1997 to 2011, on the basis of rank-scoring methodology. The results of this work demonstrate that the Northern administrative districts of West Kazakhstan region have a relatively high or an average level of social and economic development. A low level of social and economic development characterizes the administrative districts located to the south, west, southwest and southeast of West Kazakhstan region. These spatial differences reveal the current asymmetry in the level of social and economic development of the administrative districts, which determined the need for detecting major priorities in regulation of spatial social and economic development of the region. Thus, we propose the basic priorities for the spatial regulation of social and economic development of West Kazakhstan region within the framework of an effective intra-regional policy. The research results can be used by local government agencies to develop a regional management program for spatial social and economic development of West Kazakhstan region.

**UDC Classification:** 553, 332.1'711

**Keywords:** West Kazakhstan region, spatial, social, economic development, asymmetry, typology, intra-regional policy, priority

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## UTILIZATION OF INTERNET SOCIAL MEDIA SITES: STUDENTS' PERSPECTIVE

Olivera Grljević<sup>1</sup>, Zita Bošnjak<sup>2</sup>

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**Abstract:** Intensive internet and social media sites usage has posed certain changes in modern business, particularly regarding relationship with customers. More successful companies have already embraced these possibilities and changes, and improved their overall business strategies. Higher Education Institutions as services providers can also benefit from internet social media sites, particularly in the field of enrollment strategy and attraction of prospective students. Analysis of user generated contents on social media sites can provide the institution with the better insights on its reputation, students' opinion, preferences, and attitudes regarding the services they provide. It could also provide better groundwork for improvement of its relationship with students. Since different user personalities engaging in social media conversations comprise variety of groups and different usage profiles, the goal of this article is to evaluate the usage of social media sites among students and to identify different user profiles among prospective students for the Faculty of Economics Subotica, Serbia.

**JEL Classification Numbers:** D83, D85, C38

**Keywords:** Social media, internet, analytics, clustering

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## **MECHANISMS FOR SCIENTIFIC RESEARCH COMMERCIALIZATION: AN INDUCTIVE ASPECT**

Alexander Ermakov<sup>1</sup>

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**Abstract:** Universities are playing an increasingly important role in the development of innovative technologies, so the subject of university scientific research results implementation is extremely important. Obviously, the mechanisms for innovations commercialization need to be reformed by identifying weaknesses and growth factors, analyzing statistical data arrays, and comparing the findings with the subjective understanding of the current situation. After counting statistics in accordance with the current state of the economy and conducting polls, key issues in the current situation for commercialization were formulated. Patent activity was reviewed for classical universities.

We have discovered that for the execution of the “third mission” in universities, it is necessary to form media field of innovation, develop the concept of innovative structures interaction, motivate students and staff, and use the potential of student associations. The results of the analysis have practical interest and need approbation in universities’ centers for technological transfer.

**JEL Classification Numbers:** O32, O33

**Keywords:** commercialization mechanisms, entrepreneurial university, innovative university

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## **SOCIAL ADAPTATION OF PEOPLE WITH DISABILITIES**

Marina Sadovski<sup>1</sup>

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**Abstract:** The article discusses the idea that children with movement disorders have great potential for motor and mental development. The experiment consists of two stages. In the first stage of the experiment, the characteristics of disability in children and adolescents (between age 12 and 16) with Infantile Cerebral Palsy are determined. During this stage, two diagnostic methods, bodily “Me” and “The Color-A-Person Body Dissatisfaction Test,” are used.

In the second phase of the research program, social pedagogical aids for people with disabilities have been developed. On the basis of the experimental work, the obtained social pedagogical insights have been successfully implemented in the social adaption of disabled children.

It is determined that this method is promising to help adults and children with mobility impairment to enhance their mental well-being, attain a positive body image, express their feelings freely, interact socially using a motor component, and above all—enjoy the movements. This method can ensure the effectiveness of social adaptation for individuals with disabilities.

**JEL Classification Number:** O35

**Keywords:** socialization, adaptation, disabilities, infantile cerebral palsy, dance therapy, body consciousness

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## PIARIST EDUCATION IN THE HISTORY OF SLOVAK EDUCATION

Katarina Racekova<sup>1</sup>

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**Abstract:** Throughout history, religious schools have always played a crucial role in the development of Slovak educational system. Until the 18<sup>th</sup> century, the majority of Slovak schools had been either Evangelical or Catholic. Mainly Jesuit and Piarist religious orders belonging to Catholic Church had provided education to the youth. Their educational work is, however, depicted in the textbooks dealing with the history of education in the period of 1948 to 1989 either 1) in a highly distorted way, which means that Jesuit schools are presented as outdated and retrogressive as a result of the communist ideology, or 2) that the religious history–Piarist schools have not been dealt with at all.

This study aspires to provide the analysis of Piarist schools throughout the history of Slovak education between the 17<sup>th</sup> and 20<sup>th</sup> century, describe the related literature published past the year 1990, and further outline the possibilities of dealing with this issue in the future.

**UDC Classification:** 377

**Keywords:** Piarist, Jesuit, Catholic, Evangelical, Slovak education

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## **CURRICULAR CONTENT OF THE BASIC EDUCATION IN ALBANIA: TENDENCIES AND INNOVATIONS**

Zhuljeta Cinga<sup>1</sup>

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**Abstract:** Up until now, the main objective of every educational reform has focused on the educational curriculum, which constitutes the axis of every educational system. Every reform in the educational system in general has brought qualitative and sustainable changes to its entire dynamics. This means that the curricular reform cannot be limited to only one of its elements, but must permeate through all of the interactive elements within the educational system.

Today in Europe, there are two tendencies in the curricular reformation: the first enriches the curriculum with new parameters by objectively reflecting the wholeness of knowledge needed to be transmitted, even though the curricula have the tendency to be similar to the education plans and instructional programs; the second tendency places the frame around education and training, which is now being increasingly perceived as a political instrument.

The aim of this work is to describe and review not only the curriculum as a global concept, but also the way the curriculum should be conceived regarding the general principles, organization, structure, and its application with the educational reform that took place in Albania from 2004 to 2007. Specifically, we must treat and highlight the issues that directly impact the curriculum including: reflection of the society (bases, objectives, main concepts, etc.); pedagogical and administrative action plan through which the educational system functions (the curricular framework, instructional plans, structure, instructional tools, etc.); instrument and process of pedagogical and dynamic educational process (instructional contents, learning strategies, evaluation, and the learning results); and, administrative development (conception, application, and following the curriculum in continuance).

This work highlights the permeation of curriculum path-crossing built “after the logic of objectives” toward that built “after the competence logic” in order to fulfil its final mission as a “curriculum focused on the learning results.” This indicates the supplementation facts with two important curriculum documents: “the curriculum frame,” which reflects the new meanings that provide a new interrelation between the educational contents and learning results, as well as “the fundamental directive” for the strategies and techniques of building key competences in basic education.

**UDC Classification:** 3-37

**Keywords:** curricular content, curriculum, concept, basic education, innovations, reform

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# MEDICINE AND PHARMACY

## THE IMPACT OF THE ENZYME STEROID 5 $\alpha$ -REDUCTASE 2 DEFICIENCY ON UROGENITAL BIRTH DEFECT IN MALES

Livia-Irina Olaru<sup>1</sup>

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**Abstract:** This research work on 5 $\alpha$ -reductase 2 is aiming to put into evidence how a mutation of the gene codifying for this enzyme can affect the phenotype of different males, leading at a partial female phenotype. This type of research focuses on offering a scientific explanation on different health problems affecting the normal lives of some people, even from early stages of their evolution.

The experiment is focused on studying the impact of an enzyme called “steroid 5 $\alpha$ -reductase” on the development of male urogenital components during the embryological life. In order to study the steroid 5 $\alpha$ -reductase 2 activity, the following procedures were used: isolation of a 5 $\alpha$ -reductase 2 gene, genomic DNA isolation, and polymerase chain reactions.

Biochemical analysis put into evidence two mutations representing opposite poles of disease manifestation, i.e. feminization of external genitalia versus predominantly male development. It suggested a correlation between clinical expression and severity of the impairment of enzyme function. As mentioned by Imperato-McGinley, Guerrero, Gautier, & Peterson (1974), one of the mutations is called “G196S mutation.” This mutation consists of a serine substitution for a glycine at position 196. In this case, the level of 5 $\alpha$ -reductase activity was sufficient to induce partial virilization. The second type of mutation is called “G34R mutation.” This mutation consists of an arginine substitution for glycine at position 34. The G34R enzyme is essentially inactive, thus giving rise to the female phenotype.

Mutations in the type 2 gene are responsible for autosomal recessive genetic disease of 5 $\alpha$ -reductase deficiency.

**UDC Classification:** 612.577

**Keywords:** conversion of testosterone, dihydrotestosterone, virilization, mammals, G196S mutation, G34R mutation, steroid 5 $\alpha$ -reductase

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## REVIEW OF HOSPITAL MANAGER'S COMPETENCIES IN ASTANA

Ayagyozy Umbetzhanova<sup>1</sup>, Gulmira Derbissalina<sup>2</sup>, Vitaliy Koikov<sup>3</sup>, Lyazzat Karsakbayeva<sup>4</sup>,  
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Dameli Kassimova<sup>9</sup>

**Abstract:** Currently, in the Republic of Kazakhstan, the institution of professional managers and transparent forms of health organizations management, including modern management technologies, are being implemented. Thus, sufficient professional competency of managerial decision-makers should be one of the most important factors in ensuring the development of a national health system and implementation of all current reforms in the industry. This article aims to investigate the high relevance of the evaluation of health care manager's competencies and the development of measures to improve its level.

In this cross-sectional study, we have analyzed managerial competencies of different levels of healthcare managers using a special questionnaire, which was developed by EPOS health management group to assess their competencies. We interviewed 61 managers of different levels. On the basis of feedbacks, core competencies and their possession by hospital managers were identified.

At the first stage, respondents were asked to assess the importance of different competencies required for their work activity. All levels of management showed the high practical importance of assessed competencies. Results of the basic level demonstrated a practical importance of competencies ranging from 73% to 85%, the middle-level managers were from 83% to 93%, and senior level results were 97% to 98%. The next stage of the survey was an assessment of respondent's average level of self-esteem for the competencies they possessed. Mid-level managers showed a higher possession of competencies than other levels, from 56.8% to 70.2%; the basic level was from 46.9% to 59.6%; and senior level was from 41.6% to 54.7%. The questionnaire was designed in a way to highlight the training gaps as the difference between the importance attributed to the command of a given piece of knowledge, competency or skills, and the level of proficiency the managers are demonstrating currently. Finally, the third stage assessed the training required, wherein each management level has their specific training requirements. As research shows, senior managers have the highest level of required training. For senior level, the greatest needs for training are "self-management" and "quality management." For basic level, trainings are in "HR management" and "quality management." For middle managers, their training needs are in all domains of management.

There is a discrepancy between the required and the actual competencies that different levels of health managers have. The largest gap between mandatory and existing competences exists at the basic level, in "Personnel Management." A gap in the mid-level was in "Information and Financial Management"; and it was in "Quality Management" for the senior level. The proposed questionnaire could help to identify the most important training required to fill these gaps.

**UDC Classification:** 614.2-005.336.2

**Keywords:** competency, assessment, healthcare, managers, training

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## DIVERSITY OF CD1A POSITIVE CELLS IN CASE OF 25-HYDROXYVITAMIN D DEFICIENCY IN PATIENTS WITH METABOLIC SYNDROME

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**Abstract:** Vitamin D has immunomodulatory properties, which influence the immune system through a number of mechanisms, including the activation of dendritic cells (DCs). Langerhans cells (LCs) are dendritic cells in epidermis and belong to the skin immune system. DCs are professional antigen-presenting cells playing a major role in the induction of immune responses by activating native T-cells. In literature, there are no reports regarding the influence of vitamin D on DCs in patients with metabolic syndrome (MS). Thus, the aim of this study is to explore potential immunomodulatory activity of vitamin D on LCs in case of metabolic syndrome.

In this study, we have conducted an analysis on a group of patients, both male and female, diagnosed with metabolic syndrome between the age of 40 and 55. Patients' clinical examinations, measurement of blood pressure, and waist circumference were conducted. Blood biochemical analyses (cholesterol, HDL, LDL, vitamin D level, etc.) were also determined. Full-thickness circular 4-mm *Punch* biopsies were taken from 49 patients. Specimens were stained with haematoxylin and eosin, as well as immunohistochemistry using a transmembrane CD1a Langerhans' cells marker was performed by DakoCytomation EnVision method.

The average age of patients is 43 years, and mean waist circumference is 95 cm. Total cholesterol is 5.5 mmol/l, LDL is 2.3 mmol/l, and average 25-hydroxyvitamin D is 27.0 ng/ml. In the skin conditioned with MS and low vitamin D level, evidence of perivascular accumulation of LCs in papillary dermis is observed, as well as a diffusion of mild interstitial cluster of LCs in some cases. In epidermis activity, the amount and filling of Birbeck's granules is changed in cases of 25-hydroxyvitamin D deficiency. In patients with low 25-hydroxyvitamin D level, an average LC quantity in one field of vision is higher in comparison to those who have normal amount of 25-hydroxyvitamin D. Therefore, it is necessary to further investigate vitamin D activity on LCs in cases of metabolic syndrome in order to determine interactions with lymphocytes, plasma cells, and mast cells as a part of the skin immune system.

**UDC Classification:** 616-01

**Keywords:** Dendritic cells, Langerhans cells, metabolic syndrome, vitamin D deficiency

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## ANTI-TUMOR ACTIVITY OF BACTERIAL LECTIN AND 5-METHYLURACIL ADDUCT

Elena Welchinska<sup>1</sup>

**Abstract:** The synthesis was performed using 5-methyluracil mono- and *bis*-derivatives with the halogen-containing pharmacophore groups in the composition of molecules; their physicochemical and biological properties were studied. These reactions are a typical example of substitution reactions on heteroatom N<sup>(1)</sup> of uracil molecule using as the second component the reaction of halothane—the known inhaled anesthetic. The reactions were carried out in a solvent system: benzene-dimethyl formamide and diethyl ether, under conditions of phase transfer catalysis DB-18-crown-6-complex (alkaline medium), by heating from 2 to 11 hours, followed by purification, and drying of the resulting products.

The structure of the synthesized compounds was confirmed by elemental analysis, IR and <sup>1</sup>HNMR spectra. The purity was controlled by the methods of thin-layer and gas-liquid chromatography. Chromatography, IR and <sup>1</sup>HNMR spectra of the final products were identified in comparison with the chromatograms, IR and <sup>1</sup>HNMR spectra of the initial compounds. Variation of the reaction conditions and changes in methods of synthesis enabled to receive the synthesized compounds of high purity and to increase their practical output up to 43-80%. Molecular complex of Bacterial lectin and 5-methyluracil *bis*-derivative was obtained.

The toxicity and anti-tumor activity of some of the synthesized compounds were investigated. We have found that the new molecular complex of Bacterial lectin and 5-methyluracil *bis*-derivative has high anti-tumor activity in Limphosarcoma Plissa—62.8% (activity criterion  $\geq 50\%$ ), which allows us to consider the synthesized compound as a physiologically active compound with the prospect for further study as a potential vehicle for anti-tumoral treatment in patients.

**UDC Classification:** 547.431.4 - 547.854.4; 547.96

**Keywords:** 5-methyluracile, halothane, anti-tumor, synthesis, toxicity

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## INVESTIGATIONS OF THE INFLUENCE OF SUFAN ON MYOCARDIAL METABOLISM IN CASES OF EXPERIMENTAL HEART FAILURE

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**Abstract:** This article presents the results of an influence by the new non-glycoside structure, metabolic cardiotonic drug “sufan” on the energetic metabolism and oxidative homeostasis indicators—in myocardium, brain, and spleen of intact rats and rats with adriamycin-induced heart failure. It was established that sufan increased the coefficient of oxidative/reduced forms of nicotinamide coenzymes, reduced the adriamycin, causing deterioration of the energetic metabolism and the pro-oxidative-anti-oxidative homeostasis. The use of the non-glycoside structure cardiotonic drug, sufan, is recommended in order to prevent cardiotoxic effects of the anthracycline antibiotics.

**UDC Classification:** 547.431.4 - 547.854.4; 547.96

**Keywords:** sufan, adriamycin hydrochloride, heart failure, energetic metabolism

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## INCREASE IN THE ROLE OF PHARMACIST AS A PROFESSIONAL UNDER THE CONDITIONS OF THE BOLOGNA SYSTEM IN UKRAINE

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**Abstract:** Countries worldwide are facing similar healthcare problems. Medicine develops new methods for treatment, and pharmaceutical companies invent more efficient products. These technological advances are, however, expensive, and put a double-strain on public healthcare spending: the cost of sophisticated treatment keeps growing, and improved healthcare allows patients to live longer, thus requiring more treatment. Budgetary constraints, however, require government to restrict expenditure. These challenges have to be answered in the context of existing public healthcare systems, which, are well established and complex.

Healthcare reforms will necessarily reflect these characteristics, as well as the relative political weight of the partners. Such reforms will most likely affect all partners involved in the provision and healthcare management, including social security institutions (state agencies, sickness funds, etc.), doctors, and other health professionals—pharmacists. Currently one of most important strategic tasks of modernization of the system of higher education in Ukraine is the high quality education provided to pharmacists in order to satisfy the worldwide needs.

Whatever specific reform will be adopted, the main goals are to make the system more efficient and, thus, more cost effective; and, because the first aspect will not sufficiently decrease the expenditure, it is necessary to limit the scope of public health care while maintaining a balance of benefits.

**UDC Classification:** 378.147.001.76+ 61(477-25)

**Keywords:** pharmacists, reforms, accreditation, certification

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## ENHANCING TENOXICAM SOLUBILITY BY COSOLVENCY APPROACH

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**Abstract:** The solubilization of hydrophobic drugs represents an important task in the formulation design of liquid and semi-solid dosage forms. The aim of the present study is to investigate and compare the potential of various solvent systems (water, ethanol, isopropyl alcohol, propyleneglycol, tetraglycol, polyethyleneglycol (PEG) 400, PEG 600, Captex 500 and Labrasol) and of their binary and ternary mixtures to increase the solubility of tenoxicam, a poorly water-soluble drug.

The tenoxicam solubility was determined by shake-flask method and the enhancement factors were calculated. The log-linear model and three-phase diagram were used to indicate the solubilization potential of a binary and ternary cosolvent system respectively. Among various pure solvents and cosolvent systems investigated, PEG 600, PEG 400, tetraglycol, Labrasol and the mixtures of PEG 600-Labrasol, PEG 600-tetraglycol and water-Labrasol-PEG 600 showed the highest solubilization capacity for tenoxicam.

This work generates a consistent array of solubility data for tenoxicam, which broadens the existent database and could also be useful in many processes, such as liquid and semi-solid drug formulation.

**UDC Classification:** 615

**Keywords:** tenoxicam, cosolvency, hydrophobic, semi-solid, drug formulation

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## EFFECT OF PENETRATION ENHANCERS ON *IN VITRO* PERMEATION OF PROPRANOLOL HYDROCHLORIDE FROM TOPICAL HYDROGELS

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**Abstract:** At present, there is a growing interest for developing pharmaceutical preparations for dermal and transdermal delivery of propranolol hydrochloride (PRHCl), known to suffer significant hepatic first pass metabolism and to have a short half-life after oral administration.

The purpose of the present study is to investigate and compare the effect of various penetration enhancers on transdermal permeation across excised pig ear skin *in vitro*, from 3% w/w PRHCl hydrogels based on 2% w/w hydroxyethylmethylpropylcellulose. The studied penetration enhancers include ethanol at 60% w/w concentration, propyleneglycol at 30% w/w concentration, Transcutol P, oleic acid, 2-pyrrolidone, menthol,  $\alpha$ -bisabolol and eucalyptol at 5% w/w concentration.

The PRHCl hydrogel formulations were evaluated for physical appearance, drug content, pH, rheological properties; also, *in vitro* drug release through porcine skin was determined using Franz diffusion cells. Flux, permeability coefficient, lag time, and release rate were calculated. The terpenes (menthol,  $\alpha$ -bisabolol and eucalyptol) were significantly more effective as penetration enhancers than the other studied compounds. Furthermore, PRHCl penetrated the skin the fastest and in the greatest extent in the presence of eucalyptol in hydrogel formulation.

The results suggest the potential use of menthol,  $\alpha$ -bisabolol and especially eucalyptol for permeation enhancement of PRHCl in the delivery of significant amounts of drug through skin.

**UDC Classification:** 615

**Keywords:** PRHCL, penetration enhancer, *in vitro*, topical, hydrogel, terpenes

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## INFLUENCE OF THE TYPE AND CONCENTRATION OF COSOLVENT ON THE PHYSICOCHEMICAL PROPERTIES OF CARBOPOL 974P GEL CONTAINING TENOXICAM

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**Abstract:** Tenoxicam (TNX) is a poorly water-soluble, non-steroidal anti-inflammatory drug (NSAID), widely used in the treatment of rheumatic diseases, but its oral and parenteral administration leads to severe gastrointestinal side effects, which may be prevented by dermal application—considered as an alternative administration route. Gels are conventional pharmaceutical dosage forms particularly used for dermal administration of drugs.

In this study, TNX was formulated as a 1% Carbopol 974P gel. The influence of two cosolvents (tetraglycol and isopropyl alcohol) and their combinations on the physical-chemical properties of gels was investigated. Gels were assessed for appearance, homogeneity, pH, rheological properties (viscosity, rheological behavior, consistency, and spreadability) and *in vitro* TNX release through synthetic membrane and through porcine skin.

Tetraglycol decreased significantly the formulations consistency and increased their spreadability; also, it improved the TNX permeation compared to the control gel. Isopropyl alcohol did not affect the gels consistency and spreadability, but it increased the TNX transmembranar flux in a higher extent than tetraglycol. Further, with the mixture of tetraglycol- isopropyl alcohol in 1:1 mass ratio, TNX penetrated the skin quicker and in a greater extent.

These findings suggest that the 1% TNX gel containing 25% tetraglycol, 25% isopropyl alcohol, 1.2% Carbopol 974P and water can be considered for further *in vitro* and *in vivo* studies to develop an effective topical anti-inflammatory dosage form.

**UDC Classification:** 615

**Keywords:** Tenoxicam, TNX, anti-inflammatory, Carbopol 974P gel, NSAID, cosolvent

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# NATURAL SCIENCES AND ICT



## METHODS OF EXPERIMENTAL VERIFICATION OF STEINER THEOREM IN PHYSICAL PRACTICUM AND LABORATORY WORK

Zharilkasin Iskakov<sup>1</sup>

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**Abstract:** In this article, the technique of laboratory work on experimental verification of Steiner's Theorem in laboratory conditions is developed. To do this, specially designed experimental device was used. The main part of such device is a simple physical pendulum, swinging freely about the axis of suspension, consisting of a cylindrical disc set on a thin rod. To determine the moment of inertia of cylindrical body about the axis of vibrations, property of a physical quantity additivity was used. When processing experimental results, functional approximation by a least squares method was applied; as a result, the empirical expression of Steiner's Theorem was achieved. Results of experimental studies were very close to the results of theoretical calculations. Laboratory work can be easily repeated for a body of arbitrary shape. The methodology used can be recommended for physical practicum in universities as an effective and easy way of experimental verification of Steiner's theorem.

**UDC Classification:** 531, 7

**Keywords:** inertia, moment, Steiner's Theorem, experimental verification

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## CRITICAL FACTORS AFFECTING THE UTILIZATION OF CLOUD COMPUTING

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**Abstract:** This research presets the critical factors that influence the use of cloud computing, in case studies of large and medium-sized enterprises in the metropolitan area of Monterrey. The critical factors are found, according to literature: dependency provider; ignorance of the location, where the information, service knowledge, knowledge of laws, service offered by suppliers, is stored; cost; and information security, describing the research and development, which are significant and demonstrative in its impact.

We used Cronbach's alpha to check the validity of the measurement instrument and used a linear regression method to measure the significance of the variables. We also relied on some measuring instruments, such as Beta, R-squared, Standard Deviation, Anova, Tolerance, and Collinearity index to propose a model.

**UDC Classification:** 004.9

**Keywords:** cloud computing, internet, information technology, cost, services, security

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## **TURKISH TRANSLATION COMPANIES' USE OF COMPUTER ASSISTED TRANSLATION TOOLS**

Halil İbrahim Balkul<sup>1</sup>, Hüseyin Ersoy<sup>2</sup>

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**Abstract:** Nowadays, Computer Assisted Translation (CAT) tools are undoubtedly among indispensable parts of both translation industry and academic translation world. Thanks to the variety of translation memories, machine translation systems, desktop publishing tools, and terminology management applications, the body of translations carried out in a specific time has increased in a considerable amount compared to the situation in past. In this regard, the current inquiry aims at investigating Turkish translation companies' use of CAT tools via examining the websites of 39 translation companies, which are the members of two important national translation providers' associations in Turkey.

The results of the existing research are limited to the available information presented in the websites of the aforementioned translation companies about the use of CAT tools. Further studies can shed some light on the issue in a more overarching way if the number of translation companies to be examined is increased and questionnaires are delivered more accessibly, either by paper or online. Besides, this study is an attempt to emphasize that translation companies will have much more work demand from customers if they display information technologies they master on their websites.

**UDC Classification:** 81

**Keywords:** computer assisted translation, translation market analysis, translation company, internet marketing

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## COLOR CHANGE — MASS LOSS CORRELATION FOR HEAT-TREATED WOOD

Cristina Marinela Olarescu<sup>1</sup>, Mihaela Campean<sup>2</sup>

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**Abstract:** Heat treatment is renowned as the most environmentally friendly process of dimensional stabilization that can be applied to wood, in order to make it suitable for outdoor uses. It also darkens wood color and improves wood durability. The intensity of heat treatment can be appreciated by means of two parameters: the color change occurred in wood due to the high temperature, and the mass loss, which is a measure of the degree of thermal degradation. In order to find a mathematical correlation between these two parameters, an experimental study was conducted with four European wood species, which were heat-treated at 180°C and 200°C, for 1-3 hours, under atmospheric pressure.

The paper presents the results concerning the color changes and mass losses recorded for the heat-treated wood samples compared to untreated wood. For all four species, the dependency between the color change and the mass loss was found to be best described by a logarithmic regression equation with  $R^2$  of 0.93 to 0.99 for the soft species (spruce, pine and lime), and  $R^2$  of 0.77 for beech. The results of this study envisage to simplify the assessment procedure of the heat treatment efficiency, by only measuring the color—a feature that is both convenient and cost-effective.

**UDC Classification:** 62-4

**Keywords:** color change, heat treatment, mass loss, wood

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## NEW SENSOR PANELS BASED ON NANOSTRUCTURED COMPOSITES

Sergey Panchenko<sup>1</sup>

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**Abstract:** Simplification of sensor panels production technology is an ongoing concern given the growing range of their application. A new type of sensor panels based on multilayer polymer composite materials containing nanoparticles is presented in this work. In the simplest case, the composite contains three layers, while the two outer layers act as plane light conductors; one of the layers is the delivering conductor, while the other is the measuring conductor. As a result of mechanical impact, the two specified layers come into optical contact with each other, which is provided by the choice of elastomechanical properties of the intermediate layer consisting of a hydrogel immersed with nanoparticles.

A secondary source of light comes into existence after optical contact between the specified layers in the measuring light conductor. Determination of its coordinates is carried out based on intensity measurement of optical signal at fixed points, which becomes possible under the symmetrical condition of directionality diagram of the specified source. Circular symmetry of directionality diagram is achieved through multiple reflections of optical emission on the surface of nanoparticles that are infused into the intermediate layer of the composite.

**UDC Classification:** 004.35

**Keywords:** optical sensor, multilayer polymers

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## HYDROPHILIC INTERPOLYMER ASSOCIATES AS NATURAL ANALOG OF NEURAL NETWORK

Ibragim Suleimenov<sup>1</sup>, Sergey Panchenko<sup>2</sup>

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**Abstract:** The nature of a significantly new class of substances, hydrophilic interpolymer associates, has been recently determined. These compounds take an intermediate position between classic interpolymer complexes and polymer hydrogels. They can be treated as a network formed by water-soluble macromolecules that exists in a dynamic mode, i.e. the connections between the macromolecules are being constantly formed and destroyed.

This article explains that a hydrophilic interpolymer associate may be considered as an analog of natural neural network provided that the part of macromolecule that forms the dynamic network carries an electrostatic charge. In this case, transition of this charge within the associate may be considered from the viewpoint of a signal in the neural network.

It is determined that the considered analogy enables deeper understanding of the nature of neural network scenarios of evolution that preceded the biological evolution.

**UDC Classification:** 544.35

**Keywords:** neural network, hydrophilic interpolymer associates, biological evolution, Hopfield network

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## NON-DARWINIST SCENARIOS OF COMPLEX SOCIAL AND NATURAL SYSTEMS EVOLUTION

Ibragim Suleimenov<sup>1</sup>

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**Abstract:** Identifying general patterns of complex systems (both social and natural) evolution remains of current interest and is far from its conclusion.

This article presents a new approach that enables us to formulate the criterion for “complexity” of a system. In particular, it is shown that a system of arbitrary nature may be considered as complex provided that there is a complimentary neural network. Number of examples proving legitimacy of such approach is presented in this article. It is shown that partially dissociating macromolecules, set of financial agents, fragments of society, etc. comprise analogs of neural networks.

This enables us to suggest a new scenario of complex systems evolution that is drastically different from a Darwinist one. According to the suggested scenario, enveloping neural network undergoes evolution, while parameters of its compound parts may stay unaltered. In the second stage, the network “chooses” those elements that fit the changed conditions.

The realization of this scenario requires significantly less time than the one based on random mutations of selected elements.

**UDC Classification:** 53.01

**Keywords:** evolution, complex systems, Non-Darwinist

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