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**INTERNATIONAL MAY CONFERENCE ON  
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## Plenary papers:

### **CIRCULAR ECONOMY 4.0 – AN ENTREPRENEURIAL APPROACH**

**Marija Todorović**

*Faculty of Organizational Sciences, University of Belgrade, Serbia*

**Abstract:** The circular economy (CE) concept presents an accelerated roadmap toward sustainable development and is connecting academia, practitioners, policymakers and donors. Everyday business needs to be changed to enable the transition toward CE. This paper aims to examine how the entrepreneurial initiatives are creating new CE business models based on renewability, reuse, repair, longevity, upgrade and sharing. This paper gives the short presentation of CE concept with the focus on a difference from a linear economy. Based on a systematic literature review, the paper presents entrepreneurial initiatives through the practices toward CE in companies. The analysis of the most recently published articles has shown that the Industry 4.0 technologies offer a significant contribution to the CE activities and that the synergy between CE and Industry 4.0 is substantial. Companies are facing many challenges in the transition to CE and many research showed that many problems could be solved in cooperation with small businesses that have innovative CE business models. CE creates opportunities for start-up companies; therefore, the paper examines the contribution of circular start-ups to CE through innovative solutions. The main results of the paper are: a better understanding of the contribution of entrepreneurial activities to CE; in-depth understanding of the connection between different industry 4.0 technologies and CE initiatives; the list of the main problems and challenges as well as critical drivers for the success CE entrepreneurial initiatives; research agenda for future papers in the field of circular start-up and the business transition to CE. The results are relevant from macro and micro perspectives, providing insights to decision-makers in creating CE programs, as well as to support entrepreneurs.

**Keywords:** circular economy, entrepreneurial initiatives, startup, industry 4.0

## **ENTREPRENEURSHIP AS A POLICY TOOL FOR KEEPING HUMAN CAPITAL IN NON-CORE REGIONS: DOES IT WORK? EMPIRICAL OBSERVATIONS FROM EASTERN NETHERLANDS**

**Jacques C. Bazen**

*Saxion University of Applied Sciences, Netherlands*

**Abstract:** Supporting entrepreneurship among university students and graduates is often used as a policy tool to maintain talent in a certain region or even city. The rationale behind this policy is that companies are less mobile than individual graduates, at least in the context of Europe. Therefore, supporting entrepreneurship most likely leads to more business and job creation in the region of the parent university and will help to retain talent in that region. Findings from this study suggest at least that this mechanism should be nuanced: In the Eastern part of the Netherlands, a non-core region of the country, there appears to be no – quantitative – brain-drain among graduates of universities of applied sciences. Roughly the same amount of students are attracted to the region as are leaving the region. At the same time, around 20% of the identified university spin-off companies are leaving, with relatively very few of them being attracted to the Eastern part of the Netherlands. In other words, the relative “brain-drain” among spin-off enterprises is much higher than for all graduates. Important to note is that the region investigated is not a marginal peripheral region, but rather a semi-peripheral region. Also, the study is limited to graduates of applied science universities (around two thirds of the total number of higher education graduates). There is a possibility that the migration pattern among research university graduates is different. Policy implications of the findings of this study would be that a wider approach is advised. More attention should be given to the general attractiveness of regions for higher educated talent, instead of a narrow approach of stimulating & accelerating high-tech high growth start-ups.

**Keywords:** Entrepreneurship, regional development, brain-drain, university spin-off



## **MULTI-CRITERIA DECISION MAKING AND VALIDATION OF THE RESULTS**

**Dragan Pamučar**

*University of Defense, Department of Logistics, Belgrade, Serbia*

**Abstract:** Validation of the results of multi-criteria models represents the final phase before the implementation of the final decision. Therefore, it is necessary to examine the quality of the proposed solution and to select the dominant alternative from the considered set. In this paper, a methodology for checking the robustness of solutions of multi-criteria models is proposed, which includes four phases: 1) Comparison of results with the results of other multi-criteria models; 2) Influence of change of weight of criteria on ranking results; 3) Simulation of the dynamic environment through changing the input parameters of the initiation matrix; and 4) The impact of changes in the coefficients that are defined in the multi-criteria model based on the subjective assessments of the decision maker. The application of the proposed methodology is shown on the supplier selection problem.

**Keywords:** multi-criteria, sensitivity analysis, MCDM, validation.

## **DIGITAL CHALLENGES FOR MANAGEMENT AND MANAGEMENT EDUCATION**

**Valentina Gerasimenko, Tatiana Razumova**

*Lomonosov Moscow State University, Russia*

**Abstract:** Digital technologies in management of companies are becoming a challenge for the managers and employees, as the use of these technologies requires not only changes in management processes and in the organization of managers' work but as well demand special knowledge and skills. The authors have looked into the uses of digital technologies and problems, which Russian managers face when dealing with them, and it is evident, that management education should be adjusted to meet the needs of digitalization. At the same time, digitalization provides new opportunities for the development of management education through the distant technologies that widen the access to MBA programs to those students who could not afford themselves in-class studies.

One of the spheres of management, strongly influenced by digitalization, is Human Resource Management. The changes here start with the new digital forms of job search and selection of applicants, include digital methods of monitoring and control of the workers, and finally lead to electronic HR records and predictive analytics. New challenges for management and employees were formed by the pressure of involuntary transfer to the remoted jobs due to COVID-19 pandemic.

The research analyzes the issues related to the new tasks for management and new forms and methods of education in digital economy. The study is based on the results of the survey conducted in 2020 among the students and graduates of MBA program of Economic Faculty of Moscow State Lomonosov University.

**Keywords:** digital technologies, management education, MBA programs, Human Resource Management

## STRATEGIC IMPORTANCE OF TRANSFER PRICING – CONCLUSIONS FROM POLAND AND OTHER V4 COUNTRIES

**Aleksandra Sulik-Górecka**

*University of Economics in Katowice, Poland*

**Abstract:** Transfer pricing is still a challenging subject of discussion for tax authorities and multinational enterprises (MNEs) all over the world. The similarities of the transfer pricing rules in the countries stem from the implementation of OECD Transfer Pricing Guidelines and European Union law. The main differences lie in the diverse legal systems. The paper is aimed at explanation of meaning of transfer pricing, presentation of main global sources of legal regulations regarding transfer pricing, description of main transfer pricing rules in Poland, providing conclusion from the project „Transfer Pricing in V4 Countries”.

The author of the paper was a member of research team of a project conducted in the years 2019-2020, supported by the Visegrad Fund, entitled “Transfer Pricing in V4 Countries” (Visegrad Grant No. 21830038; [www.transferpricing-v4.net](http://www.transferpricing-v4.net)). The result of the project is the monograph „Transfer Pricing in V4 Countries” written in a cooperation of researchers from: the Brno University of Technology, Faculty of Business and Management (Czech Republic), DUMA – Dunamenti Adóklaszter (Hungary), Széchenyi István University, Kautz Gyula Faculty of Economics (Hungary), University of Economics in Katowice (Poland) and Matej Bel Univeristy in Banská Bystrica, Faculty of Economics (Slovakia).

**Keywords:** OECD, arm's length principle, BEPS, V4, tax

## **COMPARATIVE ANALYSIS OF EFFICIENCY OF VARIOUS SUPERVISED MACHINE-LEARNING ALGORITHMS IN WATER QUALITY INDEX PREDICTION**

**Danijela Voza**

*University in Belgrade, Technical faculty in Bor, Serbia*

**Abstract:** The creation of adequate monitoring process and prediction of surface water quality are issues that were intensively studied and improved during the last two decades. The authors of contemporary studies give their efforts to reveal techniques and develop hybrid models that contribute to the realization of efficient and effective water quality management. Some of the methods that have been increasingly used in water quality real-time prediction are based on supervised machine learning algorithms.

The aim of this study was to determine which supervised machine learning technique is the most reliable in predicting the water quality index (WQI) and water quality class (WQC). The study was conducted on the water quality dataset of Danube River on its course in Serbia. Representative supervised machine learning algorithms (General Linear Model, Deep learning, Random forest, Gradient Boosted Trees and Support Vector Machine) were employed on the data set and the results indicated that the GLM performed the best.

**Keywords:** water quality index, supervised machine learning algorithms, Danube river, general linear model, prediction

## Conference papers:

### USE OF QUALITATIVE MODELS IN RISK ASSESSMENTS

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Norway*

**Abstract:** Models offer simplified versions of concepts and relationships that we face in the real world. A risk model aims to identify relevant risks, to understand their sources and to estimate their positive and negative potential consequences. Existing standards and frameworks (For instance ISO 31000, ISO31010, FERMA, COSO-ERM) do not define criteria for the choice of models. ISO 31010 offers 31 different assessment techniques. Except for project risks and financial risks, the most frequently used models in risk assessment are qualitative or semi-qualitative models.

Qualitative models have several advantages, but they also have disadvantages, among others: they do not provide empirical evidence on the validity of the assumptions of the models and there is uncertainty about the models' accuracy and the limitations.

In the absence of models developed for and devoted to risk assessment, scholars and practitioners tend to borrow the qualitative models developed for other professions and adapt them to risk management. Adaptation without a critical evaluation of the assumptions of the model may limit both the use and credibility of the model. Using qualitative models require *critical reasoning* to ensure that the model reflects the concepts and relationships that we face in the real world.

The purpose of this paper is to contribute to such critical reasoning through two examples:

- Nordal & Kjørstad- Risk maturity model challenges the “step by step” progression approach employed by the standard maturity models and introduces a multi-dimensional spider-web model, which allows that an organization may achieve different maturity levels in different dimensions (strategy, processes, IT-operations etc.). The Norwegian School of Economics (NHH) has tested the model by sending a questionnaire to 811

organizations in Norway and the model is in use at several organizations belonging to Norwegian public and private sector.

- Nordal -risk assessment model for start-ups introduces a “likelihood barometer” instead of a traditional “frequency/guesstimated probability” approach. Start-ups lack information which would enable them to set up a reliable *likelihood scale* for potential events. They have neither statistical data nor experience data to create a probability distribution of the potential events, or to attach frequencies or probabilities to a potential event. They have limited resources and their priority is to know where to set *proactive controls* to hinder the likelihood of potential negative events and to promote the positive ones. Given this reality a creative process which bases on a scenario-analysis may be helpful for start-ups. The structure of this model will be presented at FEMIB 2020, 2<sup>nd</sup> International Conference on Finance, Economics, Management and IT Business in May 2020 in Czech Republic. The EXCEL-model itself is under discussion with several Norwegian start-ups to ensure the validity and relevance of the assumptions.

**Keywords:** start-up, risk model, scenarios, likelihood barometer, ISO 31000:2018

## **STRATEGIC PERSPECTIVE IN DEVELOPMENT OF BUSINESS PROJECTS IN DIGITAL ENVIRONMENT**

**Radmila Janičić**

*University of Belgrade, Faculty of Organizational Sciences, Serbia*

**Abstract:** The paper presents theoretical and practical aspects of strategic perspective in development of business projects in a digital environment. The subject of the paper is a theoretical and practical approach in development of business projects in a digital environment. Strategic perspective in development of business projects in digital environments is a new field of marketing research in academic institutions and scientific marketing associations. Holistic marketing approach is a platform for strategic perspective, based on internal marketing, integrated marketing, performance marketing and relationship marketing, as well as, strategic planning, strategic marketing analysis, implementation of strategies, evaluation and control. The goal of the paper is to encourage business projects in a digital environment, based on a platform of strategic perspective. Specific goal of the paper is to enlighten marketing strategies and holistic marketing approach in development of business projects in digital environment. In empirical research the paper will present results about vision, mission, strategic goals, strategic marketing analysis, strategic implementation and strategic control of business projects in a digital environment. Results of the research about customers and consumers satisfaction would be important for further research of development of business projects in digital environments. Business in a digital environment is a new place for development. It is very important to improve business projects in order to prepare business people for new business opportunities and new business knowledge and skills that are important in global jobs market places. Today, new business knowledge and skills are for new professions, such as programmer of digital platform, managers for new social media, journalists for digital sport's portal, small business in digital environment, influence marketing in digital environment, managers of fashion industry in digital environment, managers of music and arts festival in digital environment. Strategic perspective and holistic marketing approach is the basis for development of business projects in digital environments.

**Keywords:** Strategic perspective, business projects, holistic marketing approach, digital environment

## **ENTREPRENEURSHIP AND BUSINESS FREEDOM: AN EVIDENCE FROM THE RUSSIAN FEDERATION**

**Svetlana Panikarova, Maxim Vlasov**

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Institute of Economics, Ural Branch of the Russian Academy of Sciences,  
Russia*

**Abstract:** The major concentrating area of our study is to contribute to the existing literature of entrepreneurial activities related to the entrepreneurship by considering the business freedom of the entrepreneurs of the Russian Federation, where how Gross National Income per capita and Industry value added per worker influence the business freedom of the entrepreneurship in the short-run and long-run. The Vector Error Correction Model (VECM) helps us measuring the short-run and long-run association among business freedom, Gross National Income per capita, and industry value added per worker during years 1995-2018. We apply the VECM for appropriate econometric specification when the endogenous variables are cointegrated. In the VECM, we have differenced the equation and include an error-correction term measuring the deviation of the previous period from long-run equilibrium. While considering log of business freedom index as the dependent variable in VECM, the results show that in the short run log of Gross National Income per capita and the log of industry value added per worker do not influence business freedom indexes. However, the corresponding P-value of the cointegrating equation is statistically significant in the short run at the 1 % significant level. In the long-run, the log of Gross National Income per capita negatively observes the business freedom index. The industry value added per worker has a positive effect on the business freedom index statistically significant at the 1 % level. There is no autocorrelation, the errors are normally distributed, and specification imposes 2-unit moduli. We believe that our investigation will additionally support and become an encouragement issue for improving business conditions for the established and new entrepreneurs in the Russian Federation and other countries as well. Our study will encourage future researchers for further engagement in entrepreneurial activity.

**Keywords:** entrepreneurship, business freedom, entrepreneurial activity



## **LEADER VS. EMPLOYEES: INVESTIGATION OF DIFFERENCE IN PERCEPTION OF ORGANIZATIONAL CULTURE IN SMALL AND MEDIUM-SIZED ENTERPRISES**

**Ivona Mileva, Miodraga Stefanovska-Petkovska, Marjan Bojadzjev**

*University American College Skopje North Macedonia*

**Abstract:** The purpose of this study is to investigate the differences in the perception of organizational culture between leaders and employees in small and medium sized enterprises in R.N. Macedonia. In order to gain a deeper understanding, the research will analyze the role of gender, age and tenure in shaping the potential differences between these two groups of employees. Data is collected using the VOX Organizations- a model proposed by Bojadzjev et. al. (2011) for measuring organizational alignment of organizational culture values of leaders and employees. A total of 8 companies with 93 employees participated in the research. The findings indicate that all companies fall into the category Democratic Entrepreneurship. Both genders have very similar perceptions regarding the two core dimensions of the organizational culture, with slightly more females perceiving the organizational culture as more democratic compared to males. With slight variations between companies and industries, both leaders and employees perceive the organizational culture as democratic and entrepreneurial oriented. This study will contribute to a greater understanding in the difference in the perception of organizational culture between leaders and employees in SMEs. The incorporation of the findings may contribute to developing more successful alignment strategies for SMEs making an integrative organizational environment for all levels and thus creating a competitive advantage. Furthermore, these findings help in creating a better understanding of the role of gender, age and tenure and delineating its relationship with organizational culture in SMEs.

**Keywords:** Organizational culture, SME, gender, age, tenure, employee, leader

## **NEW CHALLENGES TO THE MANAGEMENT DECISION MAKING PROCESS IN DIGITAL BUSINESS ENVIRONMENT**

**Yulia V. Syaglova, Tatiana P. Maslevich**

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administration, Russia*

**Abstract:** Modern trends in the processes of financial and economic enterprises activity transformation launch new challenges to the procedure for developing and making management decisions in a modern organization. Business infrastructure is rapidly changing, and standard methods and procedures are losing their relevance in the context of using IT systems and Big Data technologies that allow accumulating and processing an incomparably larger amount of information, developing a significant number of alternatives to actions, and setting and obtaining a multi-variant algorithm for moving towards the goal. The speed of data collection and processing allows not only to reduce the time for solving current issues of the company's operational activities, but also to increase the level of decision's adaptability to the context of the current situation. In these conditions, the most urgent issue is the possibility of adapting and transforming the decision-making process to the digital business environment. On the one hand, the introduction of digital technologies makes it possible to build an algorithm for making decisions without the participation of the human factor, and on the other hand, there is a question about the possibility of managing business processes in the organization based on decisions, which made by artificial intelligence without human participation. The article presents a new approach to the place and role of the decision-making subject in the process algorithm, as well as new competencies required by managers in the modern business environment. In addition, based on the analysis of specific features of each stage of the management decision-making process, made a conclusion about the conditions and the possibility of adapting the process in the digital space. Finally, authors made hypothesis about changes in decision-making technology that may take place in the near future.

**Keywords:** digital management, digital transformation, decision making process, sustainability, digital teams, digital competences

## GRAPH DATABASE MODELING OF A 360-DEGREE E-CUSTOMER VIEW IN B2C E-COMMERCE

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<sup>2</sup>*“St. Kliment Ohridski” University – Bitola, Faculty of ICTs – Bitola, North Macedonia;*

**Abstract:** For every B2C e-Commerce company, one of the major hurdles is the challenge of tracking the digital footprints of each e-Customer's activities during their online shopping sessions. As online competition becomes fiercer over time, online retailers face increasingly more sophisticated e-Customers. Knowing their buying habits and online shopping behaviors, which is a basic premise for building any strategies vis-à-vis retaining current and attracting new e-Customers, creates great opportunities for those who are capable of following and capturing relevant data about their e-Customers' digital trails. Usually part of contemporary CRM systems, the digital profile of an e-Customer, also known as 'a 360-degree e-Customer view', represents a collection of all e-Customers' data in one place. In this paper, a graph database modeling framework for constructing a 360-degree e-Customer view is proposed, with a single aim of exploring the possibilities of using NoSQL graph databases in storing highly relational data reflecting the complex interactions between e-Customers and a particular B2C e-Commerce website during online shopping sessions. The modeling framework is based on the utilization of a Customer Behavior Model Graph (CBMG) and is being implemented in Neo4j. The resulting graph database model represents a solid basis for answering a plethora of CRM-related questions.

**Keywords:** 360-degree view, e-Customers, graph databases, B2C e-Commerce, Customer Behavior Model Graph (CBMG), Neo4j

## **STRATEGIC MANAGEMENT IN THE PUBLIC SECTOR ON THE CASE OF LOCAL SELF-GOVERNMENT SUBOTICA**

**Slavko Tomašković<sup>1</sup>, Julka Sremac<sup>2</sup>**

*<sup>1</sup>Local Self-Government Subotica, <sup>2</sup>Prima Lupus doo Subotica, Serbia*

**Abstract:** Effective and quality work of public companies requires a great knowledge of both the management of public enterprises and the very nature of the activities they are engaged in. The main note of the work of public companies is given by the highest management, who is largely responsible for the results of the work of these companies. Main task of top management is defining the strategy of a public company in accordance with the interests of the founders. Strategy of a public company is a good and integrated plan that directs the strategic advantages of the enterprise towards environmental challenges. Strategic management is a system of decisions and actions that lead to the development of a strategy that helps achieve certain goals. Therefore, the modern strategic management of a public company is directed to work in complex conditions. This means that strategic management works with the task of finding a fine boundary to optimally satisfy the interests of society and the interests of the enterprise as a subject of business. Reason for this is because public companies are more than just the sum of the parts in which a well-managed group can achieve much more than any of its members individually.

**Keywords:** Strategic Management, Public Sector, Strategic Directions for Development, Local Self-Government Subotica

## **THE DIGITAL TRANSFORMATION PROGRAM MANAGEMENT IN MEDIUM-SIZED BUSINESSES: A NETWORK APPROACH**

**Valery Anshin<sup>1</sup>, Alla Bobyleva<sup>2</sup>**

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*<sup>2</sup>Lomonosov Moscow State University, School of Public Administration, Financial Management Department, Russia*

**Abstract:** The article deals with the process management's issues of digital transformation in companies. The emphasis is made on the consideration of program's projects as interrelated components of the program with the features of emergency system, not as a weakly interconnected complex (linear set) of projects.

Authors propose the organizational model of transformation's program management and the new approach to prioritizing projects based on the use of network analysis. The suggested method allows to evaluate the role of the project in the transformation program and its impact on the other projects, as well as its impact on the planned benefits of the program. It also allows to distribute resources between projects and to assess the risks of the program as a whole.

The article focuses on the differences of medium-sized companies' management methods: on the one hand, from companies in small (micro) business, and on the other hand, from large companies.

The application of the method was tested at a medium-sized poultry farm. The analysis of projects of the real program was made, the network model of the program was built, and the probability of projects' and the program at all success was estimated. The evaluation of the program indicators allowed the authors to make conclusions about priorities of separate projects.

The proposed approach can be used in various companies, regardless of industry affiliation.

**Keywords:** digital transformation, program management, network approach, medium-sized business

## **APPLICATION OF BUSINESS PROCESS MANAGEMENT SYSTEMS IN BULGARIA**

**Sibel Ahmedova**

*Technical University of Varna, Department of Industrial management, Bulgaria*

**Abstract:** This publication discusses the theoretical aspects of the concept of business processes in business organizations. The main stages of business process optimization and management are discussed. The implementation of the business process management systems in Bulgaria has been analyzed as a result of which the advantages and disadvantages of their application have been identified.

**Keyword:** business process, business systems, optimize the process

## **FINANCIAL MANAGEMENT AND DIGITAL TECHNOLOGIES IN BUSINESS ORGANISATIONS**

**Sibel Ahmedova**

*Technical University of Varna, Department of Industrial management, Bulgaria*

**Abstract:** The primary purpose of the present paper is to explore and redefine the decisive role of the financial management through the prism of digital technologies for the purposes of improving the company's overall performance. Provided is a detailed analysis into the very nature of the financial management in order to reveal the vital link between today's digital technologies and the effective administration of the organisation's funds. Conducted, to that effect, was a further study among a number of manufacturing enterprises applying digital technologies for better management of their financial resources. Summarised, subsequently, are the effects of their implementation upon the general economic activities of the surveyed business organisations.

**Keywords:** business organisations, digital technologies, financial management, investments, profitability

## **METHODOLOGICAL APPROACH TO ASSESSING THE DEVELOPMENT OF TECHNOLOGICAL INTEGRATION**

**Alexander Miller, Maksim Miller, Yuriy Deryabin**

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**Abstract:** The purpose of the research is to develop a methodological assessment approach to the development of technological integration of manufacturing enterprises in the Russian Federation in the context of priority scientific and technological development of the Russian economy. The basic research methods are key provisions of management theory, organization theory, and modern theories of technological development. Methodological basis in the system, process, resource and matrix approaches. There were used a wide range of research methods: description, generalization and abstraction, classification, argumentation, analytical and graphic methods. Theoretical results of the research are the disclosure of specific features of assessing the development of technological integration and the classification of opportunities that will allow assessing the situation regarding the decisions made by all participants of technological integration. The applied results of the research are analytical and graphical assessments of options for the development of technological integration, based on a combination of pricing and technological policy, taking into account the consumed resources and prices. It is proved that the profit is significantly higher when using data on the ratio of supply and demand for all technological transitions: from obtaining the initial resources for the implementation of production activities to the sale of manufactured products to the production market. The article offers a computational and analytical method that allows you to apply operational monitoring, due to the vector orientation of which it becomes possible to promptly make regular adjustments to the key parameters of assessing the impact of technological integration on the results of production activities of manufacturing enterprises.

**Keywords:** technological integration, methodological approach, assessment, technological transition, manufacturing industry, operational monitoring



## **ANALYSIS OF CORPORATE SOCIAL RESPONSIBILITY DIMENSIONS IMPACT ON ORGANIZATIONAL COMMITMENT OF EMPLOYEES IN TEXTILE INDUSTRY**

**Andrea Dobrosavljević<sup>1</sup>, Snežana Urošević<sup>1</sup>, Đorđe Nikolić<sup>1</sup>,  
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**Abstract:** On the way to achieving business goals organizations form a certain image of themselves by conducting their business actions. Corporate Social Responsibility (CSR) emerges as one of the practices that encourage the construction of a positive image of the organization in society. In this paper, special attention is given to employees' perceptions about the CSR of organizations in the textile industry. Employees who identify and share similar beliefs with the organization manifest a high degree of organizational commitment by spreading the good word about the organization and by increasing performance in the workplace. On this basis, a significant impact of the application of CSR practice on the organizational commitment of employees is assumed.

The textile industry is an extremely labour-intensive and resource-intensive branch of the manufacturing industry, in which many issues of CSR arise. A considerable number of questions are directed specifically at employees in the textile industry, so the need for questioning their organizational commitment based on the application of socially responsible business activities is imposed.

The research part of this paper investigates the impact of CSR dimensions on the various manifestations of organizational commitment of employees on the basis of expert assessments. Weight coefficients of CSR dimensions, as criteria in the analysis, were obtained using the AHP method. Prioritization of alternatives was performed using the fuzzy TOPSIS method. Based on the results, it can be concluded to what extent the implementation of the CSR activities influences the willingness of employees to engage more for the sake of organizational success, the adoption of organizational values and beliefs, a sense of belonging to the organization and the recommendation of the organization in which they work.

**Keywords:** Corporate Social Responsibility (CSR), CSR dimensions, organizational commitment of employees, textile industry, AHP, fuzzy TOPSIS

## COMPARISON OF ASSESSMENT OF MARITAL RELATIONSHIP QUALITY OF DEPRESSIVE AND PSYCHICALLY HEALTHY PERSON

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**Abstract:** Today's precarious society, difficult financial situation, widespread unemployment and uncertainty have led to an increasing number of people suffering from depression. In addition to pharmacotherapy for combating depressive tendencies, there are also forms of psychotherapy, as well as family and spousal support in treatment, to make treatment shorter and more comprehensive. The main objective of this study is to compare depressed with respondents without a psychiatric diagnosis regarding the quality of marital relationships, as well as whether there is an association between sociodemographic characteristics such as gender, length of marriage, educational attainment, and material satisfaction with marital relationship quality.

The study included 160 respondents, divided into two groups, 80 with a psychiatric diagnosis of depression and 80 without a psychiatric diagnosis. The following were used as instruments in this research: Marital Relations Quality Index, Norton 1983 and a questionnaire prepared for the purpose of this survey to obtain data on sociodemographic characteristics and respondents' satisfaction with material opportunities.

The obtained results indicate that the presence of a psychiatric diagnosis of depression is associated with a significantly lower quality of marital relations, that gender differences in the quality of marriage do not occur in the respondents, while they do not exist in the whole sample, that the length of the marriage is not related to the quality of the marriage, that there is an association between educational attainment and quality of marriage, as well as satisfaction with material opportunities and quality of marriage.

**Keywords:** marriage, quality of marital relationship, depression

## MARKETING CHALLENGES AND CONSUMERS PURCHASING BEHAVIOUR TOWARDS ORGANIC NUTRITIONAL PRODUCTS

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**Abstract:** The contemporary marketing paradigm of consumer purchasing behaviour regarding the choice of products in nutrition is determined by various factors. The factors that influence consumer choice and behaviour when shopping are numerous and are related to their attitude towards health and healthy lifestyle, products knowledge and eating habits, beliefs, education, but also about marketing factors related to price, distribution and marketing communication of those products, but also social and psychological factors. With the rapid development and application of science and technology customers become more aware, but also more concerned about their health, quality of life and natural environment in general. Better quality of life is associated with healthy lifestyle and healthy appearance and organic food represents one of the basic contributions to modern lifestyle and trend of present generations.

The primary research was conducted in the city of Banja Luka and it was focused on consumer behaviour towards organic nutrition products. In prospective survey participated 220 respondents, half of them were organic food consumers, and other half were consumers of inorganic food.

The data collected were processed in the IBM SPSS v23 statistical programme by using the hi square test and multivariate analysis of variance (MANOVA).

The results of the study showed that the factors such as gender, family income, education, professional status differentiate consumers of organic and inorganic nutritional products. The most important factors were determined, which influence purchasing decisions, what kind of food is the most commonly consumed by organic customers, and what kind by the consumers of inorganic food; psychological factors such as attitude, perception, belief and intention have shown positive results for the group of consumers of

organic food; and the most common problems that the consumers face up with were determined when choosing organic nutrition products.

**Keywords:** consumers purchasing behaviour, organic nutrition products, healthy food marketing

## IMPORTANT OPERATIONAL ECONOMIC DECISIONS OF GOVERNMENTS AND COMPANIES AND PANDEMIC CRISIS MANAGEMENT

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**Abstract:** Obviously, today there are very few national economies and companies immune to the crisis due to the spread of coronaviruses and the global pandemic. Whether it is macroeconomics or the mesoeconomics sector, ie. small or medium-sized enterprises - the only difference in their survival in the market (world, national or even local) is in the way they will cope with emerging problems, with continuous adjustment being essential. When it comes to the organizations of the world of work, we witness that many have focused on online business, contactless product delivery and generally digitizing the business. This paper will discuss what is happening in the world when the paralysis of the economy due to the COVID-19 virus infection persists, whether there is a recovery somewhere and where Serbia and its economic structure is in all this.

**Keywords:** crisis management, national economy, world of work organizations

## **THE ROLE AND SIGNIFICANCE OF ECONOMIC SUPPORT MEASURES TO REDUCE THE NEGATIVE EFFECTS DUE TO THE COVID-19 VIRUS PANDEMIC AND CRISIS MANAGEMENT**

**Ljiljana Stošić Mihajlović<sup>1</sup>; Miloš Nikolić<sup>2</sup>**

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**Abstract:** Obviously, today there are very few national economies and companies immune to the crisis due to the spread of coronaviruses and the global pandemic. Whether it is macroeconomics or the mesoeconomics sector, ie. small or medium-sized enterprises - the only difference in their survival in the market (world, national or even local) is in the way they will cope with emerging problems, with continuous adjustment being essential. When it comes to the organizations of the world of work, we witness that many have focused on online business, contactless product delivery and generally digitizing the business. This paper will discuss what is happening in the world when the paralysis of the economy due to the COVID-19 virus infection persists, whether there is a recovery somewhere and where Serbia and its economic structure is in all this.

**Keywords:** crisis management, national economy, world of work organizations

## **ANALYSIS OF THE KEY FACTORS OF THE BUSINESS ENVIRONMENT OF ORGANIZATIONS IN THE RUSSIAN RESIDENTIAL REAL ESTATE MARKET**

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**Abstract:** The results of the first stage of the study of the key factors of the business environment of organizations in the Russian residential real estate market based on a desk study of political, economic, social, technological and environmental market indicators that determine the cost characteristics in the residential real estate market are presented. The paper considers three main types of housing: standard housing (economy class housing), improved housing and luxury housing. The enlarged typology of residential properties allows one to assess the scale of demand for different types of housing and the corresponding consumer category. A set of factors of the business environment is highlighted for subsequent expert assessment of their impact on the cost of 1 sq. meters of real estate of different types.

**Keywords:** business environment, residential real estate market, housing and communal services, customer satisfaction, management organizations, apartment building, housing and communal services

## **M – LEARNING AS A TREND IN EDUCATION BETWEEN STUDENTS IN SERBIA**

**Sanela Arsić, Isidora Milošević, Anđelka Stojanović, Đorđe Nikolić,  
Momir Popović**

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**Abstract:** M-learning is the latest trend and new form of e-learning in higher education. The integration of mobile devices in the educational system presents enormous opportunities stretching from improved efficiency to accessibility of education to communities living in remote areas. This study investigates students awareness to intention to adopt m-learning, by examines the factors which affecting on students intention to use m-learning for education process as an addition to the standard learning process. Perceived easy to use, perceived usefulness, lecture influence and services quality are among the most important elements that directly affect on the student intention to use m-learning. For this purpose, a conceptual model of positive effects has been developed with four hypotheses. The method of the questionnaire was used to collect data. This empirical study includes 247 university students from University of Belgrade. Statistical data processing and modelling were performed using software program SPSS v.17.0. The results of this paper can help policymakers on University in Belgrade to overcome the challenges of the using m-learning and advance the teaching process.

**Keywords:** M-learning, Students, Higher education



## **INVENTORY MANAGEMENT: LITERATURE REVIEW AND PAPERS CLASSIFICATION**

**Miloš Spasić, Marinko Maslarić, Dejan Mirčetić, Svetlana Nikoličić**

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**Abstract:** Logistics plays a vital role in the country's economy, not only by providing the functioning of various economic sectors but also through income that contributes to society. The functioning of a logistic system results in the flow of materials and related information. It is based on the application of various logistic strategies, the use of a wide range of resources and services both internally and outside of individual companies. Logistics is responsible for the flow of materials through a supply chain. In contrast to the physical flow of materials, inventories are formed by different measures in the supply chain and they can also slow down this flow. The focus of this paper is on different approaches and models for inventory management. Inventory management problems have been studied for long, but there are still new approaches that are being developed in literature and put into practice. The aim of this paper is to create a review of existing literature and classification of related papers with inventory management topics, which were published in the main logistics journals.

**Keywords:** inventory management, logistics, supply chain management, literature review

## **THEORETICAL PREREQUISITES OF MATHEMATICAL MODELING OF THE PROCESS OF WASTE WATER PURIFICATION FROM HEAVY METAL IONS**

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Yuliia Bereznytska**

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### **Abstract:**

**Introduction:** among the problems of environmental protection occupies an important place solution of issues, aimed at minimizing pollution of natural objects. Intensive development of industry, agriculture, infrastructure and other industries directly affect the environment. Galvanic production is a widespread component in many industries. In turn, emissions from galvanic industries lead to environmental losses. One of the issues that still needs to be addressed is the disposal of waste from such industries.

**Methodology:** Heavy metals enter the reservoirs with wastewater from insufficiently treated wastewater and superficial flow from plants that use galvanic coating of metal surfaces or where dyes are used. Such method of purifying of flow waters from the ions of heavy metals as galvanocoagulation is widely used in the purification of washing water, which is a waste from the electroplating process. In this article a mathematical model of the process of sewage treatment from heavy metal ions by means of galvanocoagulation was developed and proposed based on the researches and analysis of existing processes of sewage treatment from heavy metal ions.

**Results and Discussion:** As a result of solving the mathematical problem, formulas were obtained to calculate the working height of the filter with enough magnesium ions. Conclusions on ways to reduce the negative impact of galvanic industries on environmental components are also given.

**Conclusion:** Thus, to implement important measures to reduce the environmental risk of electroplating, less harmful chemicals should be used, and liquid and solid wastes reused. Using a systematic approach, organizational and technical solutions, efficient wastewater treatment from limiting pollution will be ensured and production waste reduced.

**Keywords:** heavy metal ions, pollution, environmental contamination, galvanic production, waste water

## ECOLOGOHELMINTHOLOGICAL INVESTIGATIONS AND CIRCULATION OF ARSENIC IN THE SYSTEM WATER – SEDIMENTS – *CHONDROSTOMA NASUS* – *CONTRACAECUM* SP., LARVAE FROM THE DANUBE RIVER

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**Abstract:** The aim of the study is to provide data on the content and the circulation of arsenic (As) in the system water – sediments – *Chondrostoma nasus* – *Contracaecum* sp., larvae from the Danube River, Kudelin biotope, Bulgaria. For this purpose, during 2019, 113 specimens of common nase, *Chondrostoma nasus* (Linnaeus, 1758) from Danube River (Kudelin biotope) were collected. An ecologoparasitological study on the captured specimens of common nase was carried out. It was found that the nematode *Contracaecum* sp. larvae were the dominant parasite species. Data for arsenic concentration in skin and muscle samples of common nase were provided, respectively  $2.87 \pm 2.14 \text{ mg.kg}^{-1}$  wet weight and  $1.09 \pm 0.54 \text{ mg.kg}^{-1}$  wet weight; as well as in water and sediments samples, respectively  $0.05 \pm 0.05 \text{ mg.l}^{-1}$  and  $39.30 \pm 56.09 \text{ mg.kg}^{-1}$  dry weight. Positive linear correlations were found between As content in skin and muscle of common nase, in its parasite *Contracaecum* sp., larvae in samples of water and sediments ( $r_{\text{sWaters}} = 0.94-0.99$  and  $r_{\text{sSediments}} = 0.96-1.0$  at  $p < 0.05$ ). For the first time, this study reports data on the content of As in *Contracaecum* sp., larvae of *C. nasus* from the Danube River, Kudelin biotope, western Bulgaria.

**Keywords:** arsenic, Bulgaria, *Chondrostoma nasus*, *Contracaecum* sp., Danube River

## HELMINTH COMMUNITIES OF *CHONDROSTOMA NASUS* (LINNAEUS, 1758) AND THEIR BIOINDICATOR ROLE FOR THE ACCUMULATION OF CADMIUM FROM THE DANUBE RIVER, BULGARIA

**Petya Zaharieva, Radoslava Zaharieva**

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**Abstract:** The results of studies on the content of cadmium (Cd) in liver and muscle of common nase, *Chondrostoma nasus* (Linnaeus, 1758) and its parasite *Contracaecum* sp., larvae, as well as in water and sediments from the Danube River (Kudelin biotope), Vidin area, northwestern Bulgaria are presented here. The circulation of the element in the freshwater ecosystem is tracked. The content of Cd in the samples of liver and muscle is  $C_{CdLiver} = 0.32 \pm 0.25 \text{ mg.kg}^{-1}$  and  $C_{CdMuscle} = 0.07 \pm 0.05 \text{ mg.kg}^{-1}$ , wet weight, respectively. The reported concentrations of cadmium in water and sediments are  $C_{CdWater} = 0.004 \pm 0.008 \text{ mg.l}^{-1}$  and  $C_{CdSediments} = 15.75 \pm 35.84 \text{ mg.kg}^{-1}$  dry weight, respectively. The highest bioconcentration of Cd relative to its content in water samples was found for *Contracaecum* sp. (BCF = 890), and the lowest for muscle samples (BCF = 17.5). The parasite bioaccumulates 4.57 times more Cd from the muscle than from the liver. Positive linear correlations were obtained between Cd content in water/sediments and this in liver and muscle samples of common nase ( $r_{sWater} = 0.91-0.97$  and  $r_{sSediments} = 0.93-0.97$  at  $p < 0.05$ ).

**Keywords:** Bulgaria, cadmium, *Chondrostoma nasus*, *Contracaecum* sp., Danube River

**PARASITE COMMUNITIES AND A CONTENT OF  
CADMIUM IN THE SYSTEM WATER - SEDIMENTS -  
*ABRAMIS BRAMA* FROM THE DANUBE RIVER,  
BULGARIA**

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**Abstract:** For the study, forty specimens of freshwater bream (*Abramis brama*, Linnaeus, 1758) were collected from the Danube River (near the Kudelin village), Vidin region, northwestern Bulgaria. New data on parasites and parasite communities of *A. brama* from the same section of the river were presented. Six parasite species were identified: *Asymphylogora imitans* (Mühling, 1898); *Nicolla skrjabini* (Ivanitzky, 1928); *Posthodiplostomum cuticola* (von Nordmann, 1832); *Sphaerostomum bramae* (Müller, 1776)); *Pomphorhynchus laevis* (Müller, 1776) and *Contracaecum* sp., larvae. The studied section of the Danube River is a new habitat for all parasites found in freshwater bream. *A. brama* was announced as a new host for *Sph. bramae* from the Danube River. *A. imitans* was identified as a core species (P% = 25.00) in the component community of freshwater bream from the Danube River (near the Kudelin village). The study also aims to provide new information on the content of cadmium (Cd) in liver, skin and muscles of freshwater bream, water and sediments from the Danube River. The content of Cd in tissues and organs of *A. brama* was highest in liver samples (wet weight  $C_{CdLiver} = 0.80 \pm 0.67$  mg.kg<sup>-1</sup>) and decreased in order: liver>skin>muscle.

**Keywords:** *Abramis brama*, Bulgaria, cadmium, Danube River, parasite communities

## PARASITE COMMUNITIES OF *ABRAMIS BRAMA* AND ACCUMULATION OF SOME POLLUTANTS FROM DANUBE RIVER, NORTHWESTERN BULGARIA

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**Abstract:** In 2019, 16 specimens of freshwater bream, *Abramis brama* (Linnaeus, 1758) from the Danube River (805-810 river km), Vidin region, northwestern Bulgaria were collected. The fish were examined for the presence of parasites and content of copper (Cu), cadmium (Cd) and arsenic (As). The coparasitological examination revealed five species of parasites: *Asymphylogora imitans* (Mühling, 1898); *Nicolla skrjabini* (Ivanitzky, 1928); *Posthodiplostomum cuticola* (von Nordmann, 1832); *Caryophyllaeides fennica* (Schneider, 1902) and *Pomphorhynchus laevis* (Müller, 1776). The investigated section of the river is a new habitat for *A. imitans*, *P. cuticola* and *C. fennica*. *A. imitans* is a core species (P%=56.25) in the parasite community of *A. brama*. In tissues and organs of freshwater bream, the highest levels of all three elements were detected in the liver samples ( $C_{Cu}=11.43\pm 5.92 \text{ mg.kg}^{-1}$ ;  $C_{As}=4.31\pm 1.53 \text{ mg.kg}^{-1}$  and  $C_{Cd}=0.23\pm 0.14 \text{ mg.kg}^{-1}$ ), followed by those in skin and muscles. In liver samples, the levels of the elements decreased in the order: Cu>As>Cd, and in skin and muscle samples, they decreased in the order: As>Cu>Cd. The study provides new data on parasites and parasite communities of freshwater bream from the Danube River, Vidin region, as well as for the content of some heavy metals/metalloids in water, sediments and *A. brama*.

**Keywords:** *Abramis brama*, Bulgaria, Danube River, heavy metals, parasites

## FORECASTING EMERGENCY SITUATIONS CONNECTED WITH REGIONAL FLOODING BY GROUNDWATER IN SOUTHERN UKRAINE

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**Abstract:** Analysis of the problem of the current flooding by groundwater state in Southern Ukraine has shown a positive time dynamics in the last decades (from the 1980s). Previous research on the example of the Kherson region has shown that more than 70% of the area and more than 260 cities and built-up areas with the total area up to 1200 thousand ha in the region are flooded to date, which is almost 20 times more compared to 1982. As the region environmental situation monitoring data show, the yearly increase in flooded territories is 50 thousand ha (up to 500km<sup>2</sup> per year). There is a real threat of technogenic emergencies as a consequence of potentially dangerous objects flooding (railway, power grids, oil and gas pipelines, etc.) and the whole region industrial and agricultural potential functioning risk. According to the official data, there are more than 200 potentially dangerous objects on the territory of the Kherson region which under certain conditions can pose a real threat of accidents and emergencies occurring as a result of the flooding negative impact on the reduced strength of loessial-subsidence ground of buildings basement, reducing of earthquake resistance, activation of pollution migration to sources of drinking water supply.

Development of Kakhovka Reservoir and its regional backwater of groundwater (up to 16m), water losses from irrigation systems network, trunk canals and unregulated water use are recognized among the major causes of such dynamics in the territories flooding. In addition to these factors, current state of the regional territories flooding is connected with the lack of geological and hydrogeological conditions research on the territory of the Kherson region during projecting and building of Kakhovka Reservoir, North-Crimean Canal, current irrigation systems and water buildings. These factors impact resulted in

fundamental changes in hydrogeological conditions and water exchange parameters (infiltration, flow, water exchange, etc.) in the active zone of the water-bearing rocks sedimentary layers.

The author's paper addresses the issue of reasons and spatial-temporal factors of the flooding process formation in Southern Ukraine on the example of the Kherson region. The flooding impact on the region industrial and agricultural potential functioning is considered in the context of extreme ecological-hydrogeological situations development. The quantitative description of the groundwater infiltration feeding value is given in depending on natural-technogenic factors of its formation. Further region flooding is forecasted based on the analysis of groundwater level rise rate during the long-term monitoring. Comparison of the forecasted groundwater level rise rates in 2015-2019 years have shown a decent match within the margin of error.

Recommendations on flooded territories ecological safety state management suggested in the paper allow to search for optimal management decisions on the municipal level for a range of the regional potentially hazardous objects activities and prevent occurring and growth of emergencies when forming the ecological policy of the region.

**Keywords:** flooding, emergencies, environmental protection, infiltration feeding, hydrogeological ameliorative conditions, drainage



## REQUIREMENTS FOR DRINKING WATER MANAGEMENT WITHIN THE TERRITORIES OF DONBAS MINING COMPLEXES

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**Abstract:** Currently, the surface water vulnerable to pollution is mostly used for the drinking water supply in the Donetsk-Prydniprovsk region. The surface hydraulic Donbas Water complex is (85-90)% based on the use of the Siverskyi Donets river surface flow with little involvement (10-15%) of groundwater. The long-term monitoring dynamics analysis of the surface water near drinking water intakes in the Donetsk-Prydniprovsk region shows their gradual, and in many cases dangerous, degradation.

The authors' paper shows the dynamics of changes in long-term monitoring data of the groundwater sources quality hydrochemical indicators, which are used for the drinking water supply, through mineral composition. The Siverskyi Donets river main inflows (Samara and Kalmius rivers) source capacity excess is defined based on the previous evaluation of the increase in the impact of additional pollution on surface sources, from mines floods and uncontrolled leakage of mineralized and polluted water. A GIS-technologies-based mathematical model is suggested to evaluate and forecast groundwater quality from central water supply sources as well as from standby sources (boreholes, wells, underground water intakes). The model works based on the monitoring data spatial-temporal interpolation method use.

The research data allow calculating water sources quality with the insufficient density of the regular observation stationary posts and making the best management decisions on water-ecological risks prevention and necessity of the gradual transition to the given region water supply from underground protected aquifers on its basis.

**Keywords:** GIS, the surface water, hydrochemical indicators, groundwater quality, monitoring

## **CORRELATION BETWEEN WORKING CONCEPTS OF BPMN AND EBXML AND ICT MANAGEMENT IN BUSINESS PROCESSES MODELING**

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**Abstract:** Software development is an important part of ICT management in business processes. To discover and define what some specific software solution is supposed to do, it is necessary to put it into context of the business processes it is supposed to support. The quality of the process in which software requirements should be defined, is ensured through previously implemented standardized procedures of business process modeling. A wide range of activities are functionally decomposed and analyzed on data level: starting from data storage and retrieval, through data processing and organizing, to decision support or even to full automation. Business Process Model and Notation (BPMN) is a standard for business process modeling. BPMN serves as a common language bridging the communication gap that frequently occurs between business process design and implementation. BPMN supports data formats for exchange of abstract syntactic models such as XML metadata. On the other hand, ebXML (Electronic Business XML) is a project for the usage of a variant of XML used for standardization of secure business data exchange. This paper explores the potentials of using BPMN and ebXML in ICT management processes modeling, especially in the area of software support development.

**Keywords:** Management ICT, business modeling, BPMN, ebXML

## **ECOLOGICAL ASSESSMENT OF THE CONDITION OF THE OGOSTA RIVER, DANUBE RIVER BASIN, BULGARIA**

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**Abstract:** The Ogosta River is one of the biggest right tributaries of the Danube River Basin, Bulgaria. The lowest section of the river ecosystem is a part of protected area BG0000614 "River Ogosta" for the conservation of natural habitats. The ecological assessment is performed based on the main biological quality elements: macrozoobenthos, helminths and helminth communities of *Squalius cephalus* (Linnaeus, 1758). Bioindicator macrozoobenthos fauna (Biotic and Saprobic indices, EQR) indicated moderate ecological condition in a studied freshwater ecosystem. As a result of ecologohelminthological examinations of 11 specimens of chub, four species of helminths were found. They are reported for the first time of the freshwater ecosystem of the Ogosta River. *Allocreadium isoporum* (Looss, 1894) is a core species (P%=45.45%) and *Ligula intestinalis* (Linnaeus, 1758), *Rhabdochona denudata* (Dujardin, 1845), *Acanthocephalus lucii* (Müller, 1776) are component species for the helminth communities of the chub. The determined helminth species and the helminth communities indicated the biodiversity of the ecosystem, its nutrition relationships and ecological status. The results of the study are grounds for taking measures for the effective management of the freshwater ecosystem.

**Key words:** bioindication, macrozoobenthos, helminths, helminth communities, *Squalius cephalus*, Danube River Basin

## **BIODIVERSITY AND ECOLOGICAL ASSESSMENT OF THE FRESHWATER ECOSYSTEM OF THE OSAM RIVER, BULGARIA**

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**Abstract:** Biological monitoring of the Osam River, Danube Water Basin was carried out by analyzing the biological quality elements for environmental assessment: macrozoobenthos; parasites and parasite communities of the *Barbus petenyi*, Heckel, 1847. Fifteen bioindicator macrozoobenthos taxa with 108 specimens are found. The Shannon-Weaver diversity index, the total number of taxa, Biotic index, EQR and RETI indices showed a good ecological status in the studied biotope. As a result of coparasitological studies of 30 specimens of *B. petenyi*, five species of parasites was found. *B. petenyi* is reported as a new host record for *I. pileatus* in Bulgaria. The Osam River is a new habitat for the five helminth species of *B. petenyi*. *I. pileatus*, *P. laevis* and *R. hellichi* are core species for the helminth communities of *B. petenyi* from the Osam River. *I. pileatus* (53.18 specimens) followed by *Rh. hellichi* are with the highest mean intensity (7.45 specimens). A total of 14 specimens of *B. petenyi* are free of parasites (46.67%). The Brillouin diversity Index is  $HB = 0.683$ . Pielou's evenness index is low due to the obvious dominance of one of the found parasite species (*I. pileatus*), both in prevalence and mean intensity.

**Keywords:** bioindication, macrozoobenthos, helminth communities, *Barbus petenyi*, Danube River Basin

## **BRANDING AS A TOOL FOR RETAINING AND MOTIVATING EMPLOYEES**

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**Abstract:** The definition and nature of Branding are based on activities aimed at gaining the status of a brand in the minds of its customers and employees. The main objective is to create a positive attitude towards the brand as such. Branding is one of the keys and irreplaceable marketing activities of a company that will fundamentally influence the image of a product or service and thus desirable attitudes in the community of both customers (people interested in products and services) and employees. This paper focuses on Branding as a tool to retain and motivate employees. Employer branding is one of the most important activities of the company. The main goal of the company should be to employ and retain capable people within the organization. Whether employees want to stay in the organization or not is not just a matter of money. It is a matter of prestige, loyalty, solidarity and belonging to an organization. It is important to realize that employees have a huge impact on how customers perceive the company. We can say that a committed employee = a satisfied client. Such an employee understands their role in the organization and positively perceives the possibility of working in a place that motivates them and allows them to contribute to the organization's goals.

**Keywords:** Branding, Employees, Motivation, Retention, Employer branding

## **IMPROVING BUSINESS PROCESSES IN TERMS OF INTERNAL AUDITS ON THE REMOTE**

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**Abstract:** Remote audits are becoming a phenomenon today. Digitization is fast progressing and so is certification. One of the great possibilities digitalization offers is remote auditing. For small as well as some large companies, it is a good idea to recourse the internal auditor service. Internal audit as a tool that universally allows verification of processes in all respects, from the technical, planning, organizational, economic, manufacturing, operational, personnel, etc..The wide range of possibilities offered by internal audit allows to identify, define, quantify and subsequently improve parts and entire processes where non-compliance or functional threats have been identified. The paper deal with internal audits performed remotely. How to choose how to use internal audits remotely and how internal audit works remotely in practice. An important support of internal audit is quality technical equipment in connection with the security and confidentiality of data, risks associated with the use of interactive web communication. The aim of the paper is to provide an insight into the course of the internal remote audit, or to answer the question: “Are you ready for a remote audits?”

**Keywords:** internal audits on the remote, digitalization, improving

## MULTICRITERIA DECISION MAKING METHODS IN ENERGY PLANNING

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**Abstract:** Energy is the basis for the development and survival of every society and economy. The emerging economic and geopolitical crises also highlight the importance of a developed and independent energy sector. The importance of energy is so great that there we talk about energy security in countries. All of the above points to the need for strategic planning in the energy sector. The term strategic energy planning was first introduced by Häfele (1980). There are numerous definitions of strategic energy planning available in the literature today, but there is no universal one. However, the complexity of planning in the energy sector also requires the use of multi-criteria decision-making methods. This paper briefly describes the multi-criteria decision-making methods Analytical Hierarchical Process, Analytical Network Process, and PROMETHEE. Also, a brief overview of papers from domestic and international literature using these methods is given.

**Keywords:** Energy, planning, multi criteria decision making methods

## **FACTORS OF PROMOTION OF THE INDUSTRIAL ENTERPRISE IN THE B2B MARKET**

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**Abstract:** A few years ago, Russian enterprises did not have to make special efforts to promote their goods, since many of them were exclusive and the only manufacturers of such products. Consumers were committed to one enterprise. Now in the conditions of competition and market oversaturation, the process of promoting industrial and technical products have become more complicated. Developing the promotion complex increases the competitiveness of the enterprise and improves its market position.

The development of a competent strategy aimed at creating and promoting products enables the company to increase the number of consumers of its products by attracting a target audience of the competitors. This way of progressing, of course, is quite complicated and expensive, but it opens up prospects for the enterprise to develop regional and federal markets.

Marketing covers various aspects of modern economy of all countries, regardless of the level of their economic development, while any stage of the enterprise has a direct or indirect connection with marketing activities.

**Keywords:** promotion, industrial products, compressor equipment, industrial marketing



## **EMPLOYEE E-EDUCATION MODEL BASED ON ADVANCED INTERNET TECHNOLOGIES**

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**Abstract:** Knowledge characterizes an individual's ability as the totality of accepted and adopted information that can be realized individually in the day-to-day performance of required activities or collectively in various organizations in order to solve business processes. Traditional models of knowledge acquisition are acceptable in educational vocational and higher education institutions but only for students and students who have free time and interest in training. In addition to the above categories, employees of organizations that must constantly improve and acquire new knowledge necessary for the effective and efficient performance of their jobs must not be neglected. This paper introduces a model of electronic employee education based on advanced internet technologies. The presence of information and communication technologies (ICT) in organizations and households is a good prerequisite for the implementation of e-education models, while on the other hand it can be a problem to adopt innovative models based on advanced internet technologies, which is reflected in previous education, age structure, interest and readiness to sacrifice themselves for the interests of the organization in which they are employed. Key activities in the e-learning process take place via the Internet in communication between service providers (PU) devices in an educational institution and devices employed at a random location or in households.

**Keywords:** knowledge, e-education, internet technologies, employees, service provider

## **ECONOMIC ASPECTS OF CLOUD COMPUTING APPLICATION IN MARKETING**

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**Abstract:** The most important feature of Cloud computing, as an innovative and revolutionary way of using computing resources, is on-demand self-service with "pay as you go" payment system. This resource utilization and custom payment method has given Cloud computing the potential to change the economics of using information technology in virtually every area of human activity. The benefits of using Cloud Computing (and its features) are particularly emphasized in the field of communication, that is, marketing as an industry where communication is one of the key activities. Cloud computing, among other things, speeds up, that is, shortens the process of launching a product to the market, thereby directly contributing to the cost reduction of that process. By using Cloud computing, companies can innovate in their businesses, making it easier for them to reach their target groups and market segments. The goals of this paper are: to analyze the challenges posed by the application of Cloud computing in marketing, how companies respond to these challenges, to explain aspects of the application of Cloud computing in theory and practice, and to define the benefits that Cloud computing has for the economy as a whole, and in particular for the field of marketing. In order to achieve this goal, it was necessary to carry out research using appropriate combinations of numerous methods, such as analysis and synthesis method, deductive inference method, abstraction and concretization method, generalization and specialization method, proof and taxation method, comparative method and compilation method, as well as other methods.

**Keywords:** Cloud computing, cost reduction, communication, marketing, innovation

## **IDENTIFYING KEY EMPLOYEE MOTIVATION FACTORS USING THE DOCTUS EXPERT SYSTEM SHELL**

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**Abstract:** The greatest value that any company has is not its fixed assets, nor current assets, but its employees. Employee motivation is not solely a personal characteristic. It can be influenced by various factors that HR managers must take into account. The decision to motivate employees, HR managers should not make based on unproven assumptions and subjectivity, but on the basis of continuous observation, surveys, and analysis of all activities of employees to find out what are the factors with which they can influence their motivation. When an employee is motivated to work the right way, he or she performs his/her job tasks more effectively and efficiently, which directly or indirectly increases the company's profits.

The main goal of this paper is to find or extract the most important (crucial) factors of motivation from a huge number of factors, and to rank them according to the intensity of influence on motivation. As a research methodology, this paper used an inductive approach to the construction of an expert system with the help of a expert shell Doctus, Knowledge Based System Shell, which incorporates the ID3 algorithm, which is used to build a decision tree. The second, not less important goal of the paper is to integrate and systematize, in a concise way and in one place, some basic knowledge of the motivation factors that are commonly found in various articles and/or books.

**Keywords:** Motivation factors, Expert system, Inductive approach to expert system onstruction, Doctus

## **IN SEARCH OF COMPETITIVE ADVANTAGE: THE DIFFERENCES AND MUTUAL COMPLEMENTATION OF TWO APPROACHES**

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**Abstract:** Achieving advantage in competition is a task constantly faced by managers and an object of ongoing research. Being aware of the sources of advantage is crucial along the way of creating it. The paper presents a review of two main approaches existing in literature to the sources of competitive advantage: the structure – conduct – performance paradigm and the resource-based view, and discusses the differences between the two as well as their codependence. Focusing on the arguments for their mutual complementation, we integrate them in a frame that explains the factors leading to competitive advantage. The mediating role of strategy choice as well as strategy implementation within this frame is thereby justified. The frame thus constructed can be useful for management practitioners in that it outlines the factors they should focus their attention on when creating their companies' competitive advantage. It can additionally be used as a tool for diagnosing the potential of an organization to maintain competitive advantage and above-average performance.

**Keywords:** competitive advantage, strategy, resource-based view, S-C-P model, organisational capabilities

## **ORGANISATION DESIGN AND ENVIRONMENT DYNAMICS**

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**Abstract:** In a dynamic environment, organisations are faced with the challenge of remaining stable while changing in response to dynamic external conditions. This complicates the process of designing an organisation in a way that enables its alignment with the environment. By reviewing the components of the organisational “hardware” and “software”, which are involved in different organisation design models, the paper is an attempt to outline which elements are the ones that ensure adaptability without harming stability. It goes over several forms of contemporary organisational structures. Additionally, it reports empirical evidence for the role of so-called relational resources, staff loyalty, the ability to innovate, the managers’ attitude towards the reasons for success/failure, etc. in achieving better performance.

**Keywords:** organisation design, organisational hardware, organisational software

## THE MODIFIED SCALE N.A. PROF. V.A. YADOV USING FOR THE THEORETICAL DISTRIBUTIONS CREATION IN THE TURBULENT ECONOMICS

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**Abstract:** In the current social and economic conditions, academic and corporative practice the prospects of some variation series alignment methods and the goodness-of-fit tests line using are particularly defined by the available number of elements sets. Usually for the ultra small sample size which units number doesn't exceed twenty-five the problem of relation estimation becomes complicated with the current "turbulent economy" features when the stable trends duration of the analyzed sets often doesn't exceed several units. In these conditions even the Romanovsky and Pearson fitting criterion using will be concerned with the cases of discrepancy to its calculated and tabular values. During the pandemic period the data sets could be even smaller than usual, so here we propose to use the modified scale n.a. prof. V.A. Yadov which could estimate the correlation between the nature of sample representativeness in a linguistic scale and its error size in the interval scale in percentage points. In this case we offer to modify a scale with the specification of a linguistic variable terms names: an error size up to three percent could be characterized as a "minimum deviation"; from three percent to ten percent as the "usual deviations"; from ten percent to twenty percent as "tentative estimation deviations"; from twenty percent to forty percent as "evaluative deviations" and in the case of error more than forty percent as the "rough deviations". With such approach the goodness-of-fit tests computed results have the special sense also for the analyzed short statistical series.

**Keywords:** Turbulent economy, random value, fitting criterion, normal distribution (law)

## **THE ENHANCEMENTS OF MANAGEMENT PRINCIPLES IN THE ROBOTIZED INDUSTRIES PRACTICE**

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**Abstract:** An actuality of the paper theme is concerned with the fact that the robotization in the different spheres of industries could be estimated as the one of the main factors for the survival and evolution in the face of fierce competition and increased uncertainty in the modern world for many firms. If these subjects want to succeed it's necessary to realize the business competently and based it on the relevant management principles. Accordingly, due to the famous decrease in the effectiveness of some classic management paradigms application and the growth of the firms/enterprises impact which widely realize robotization opportunities in the various activities it is necessary to implement the following tasks. In our research were reviewed the classical principles of management, and then we tried to identify its aspects relating to modern companies. Also we briefly looked at the modern researches in the industrial management sphere and analyzed it as well as the practice of robotized companies. Based on reviews and analyses were proposed the enhancements to the management principles in the industrial robotization processes.

**Keywords:** Management (modern) paradigms and principles, industry, robot, automation, robotization

## **FORWARD-LOOKING STANDARDIZATION IN POST- CONSUMER PRODUCT AND INDUSTRIAL WASTE MANAGEMENT**

**Yalalina Veronika Arturovna, Vorontsov Dmitry Petrovich,  
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**Abstract:** In our study we explored the issues of the product life cycle last stage i.e. the utilization and / or recycling (reprocessing). The relevance of these aspects determines the priorities in the Russian Federation standardization development and the management tasks on this stage. The industrial wastes include products and substances, the secondary use of which is not profitable at this firm; among the methods of its disposal is the burial at specialized landfills, burning in incinerators, pyrolysis, etc. Standardization in the specified high-potential sphere is necessary; it is expected to solve a number of problems, including the problems of resources limitation (in all ways), i.e. the processing, utilization, recycling. In the article we analyse the Russian Federation technical committees activities which realise the implementation of this direction and propose the ways for its enhancement. Special attention here should be paid to the development of such types of standards like the GOSTs.

**Keywords:** Standardization, disposal, technical committee, resource saving, standards



## AN ESTIMATION OF THE LINEAR CORRELATION COEFFICIENT MINIMUM MODULUS

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Vorontsov Dmitry Petrovich**

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**Abstract:** Often in the linear correlation coefficient calculations for its statistical significance estimation is used the famous Chaddock's scale of the relationship between the studied phenomena with the characteristics like "weak", "medium", "visible", "high", "very high", and for the significance evaluation used the Student's t-test table with the alpha-level  $\alpha = 0.10; 0,05; 0.01$  with the available degrees of freedom. So, the significance in both cases is assessed on a step by step manner, which is not fully expedient. For this problem decision is proposed a modified Student's scale and then it is possible to use the Chaddock's scale. As the raw data we use statistical aggregates with the limited size; after some modifications we create on this variation series and apply the consent criteria. For the noted problem solving we also must note the received equations for CLC error and non-strict inequality. Some part of the results was also obtained with the author's program in FoxPro 2.5.

**Keywords:** Distribution law, correlation coefficient, turbulent economy, statistical population, consent criteria

## MARKETING MANAGEMENT IN CONDITIONS OF MARKET INSTABILITY

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**Abstract:** The basic characteristic of modern business conditions is the constant variability of environmental factors, and therefore the great uncertainty in business. The opportunities that existed in the market in the previous period are unlikely to be the same in the future, and the present carries with it lower problems that require operational decisions on a daily basis. In this regard, marketing managers have a very delicate task to present, anticipate and manage marketing processes and daily marketing activities. Unstable market conditions, when for many reasons there is a fluctuation of market developed and / or offers, as well as increased conscious consumers regarding the required requirements, marketing managers face numerous problems in business decision making. This read is about marketing management in volatile market conditions.

**Keywords:** marketing, management, market, supply, demand

## THE IMPORTANCE OF LOGISTICS AND SUPPLY CHAINS FOR PANDEMIA CONDITIONS

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**Abstract:** The COVID-19 pandemic has introduced an unprecedented amount of uncertainty into the global economy as countries around the world battle growing troubles, implement broad social distancing strategies, and seek fiscal interventions to stabilize markets. What about logistics and supply chains in the market? Is there an impact of the COVID-19 virus on logisticians' obligations when securing market requirements in accordance with international business standards? Most entities have focused their attention on protecting employees, perceiving and managing risks that are threatening to business, and managing supply chain downtime due to efforts to curb the spread of virus coronas. The pervasive impact, now pandemic, on businesses and supply chains will be clearer in the coming period, while global economic recovery will depend on the impact of the affected countries to cope with the effects of the virus.

**Keywords:** logistics, supply chains, market

## **IMPACT AND IMPORTANCE OF SUBSIDIES ON THE ECONOMIC EFFECTIVENESS OF ORGANIC FARMING**

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**Abstract:** The characteristic features of organic farming, such as labour intensity, seasonality, higher production costs, lower incomes, more difficult production realization, etc., have a significant impact on the state and development of organic farms. The goal of the present scientific paper is to analyse and evaluate the impact and importance of subsidies on the economic effectiveness of organic farming. The study is based on directly collected empirical information from 73 organic farms operating on the territory of Plovdiv District in Bulgaria. Our research clearly shows that subsidies have a significant impact on organic production and the factors that determine it. However, given the many organizational and economic problems that accompany organic production, we believe that financial support research is essential to the future development of the sector.

**Keywords:** organic farming, subsidies, financial support research

## **QUOTATION AS A MEASURE OF SCIENTIFIC CONTRIBUTION – THE POSITION OF THE WESTERN BALKAN COUNTRIES IN RELATION TO SOME EU COUNTRIES**

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**Abstract:** In this paper, the ranking of scientific workers in the countries of the Western Balkan (WB) is performed according to the achieved result measured through the standardized Stanford University procedure for measuring the citation of scientific papers, using the so-called composite coefficient of citation (c). It was determined that only researchers from Serbia and Montenegro from the WB countries will be on this prestigious list, with modest results in relation to other comparable EU countries, as well as EU countries similar in terms of population. The obtained results indicate that the development of science in the WB countries is in an enviable lag behind the results of science in other EU countries, which will set great obstacles for further EU integration of these countries.

**Keywords:** Western Balkan countries, quotation, composite coefficient, EU countries

## APPLICATION OF ADVANCED INDUSTRY 4.0 TECHNOLOGIES IN EUROPEAN AND SERBIAN ENTERPRISES

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**Abstract:** The fourth industrial revolution (Industry 4.0) is heavily influencing companies by transforming the contemporary economy and society. Industry 4.0 integrates the cyber and physical worlds by utilizing technology. Consequently, Industry 4.0 is a socio and technical related system to achieve industrial expansion with continuous digital transformation. The paper aims to investigate advanced technologies included in Industry 4.0 that have a high potential to significantly develop the digital economy in European countries and Serbia. For purposes of this paper the secondary source of data was gathered, such as Big data, 3D printings and robotics, Cloud computing services, and Horizontal and vertical integration systems. Analyzed data depicts that European countries and Serbia have made different progress in the employment of technology based on the fourth industrial revolution, where Serbian enterprises are making technological progress with a lot of delays, as well as in the other developing countries.

**Keywords:** Industry 4.0, Big data, 3D printings, Horizontal and vertical integration systems, Cloud computing services

## **BRAKE FORCE TESTING IN ERGONOMICALLY ADJUSTED CRANE CABINS**

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**Abstract:** Crane operators' job is extremely demanding. They work long hours in constrained workspaces in awkward posture. Their neck extension, trunk flexion and repetitive arm movement are associated with an increased risk of developing neck and shoulder pain that leads to reduced working capacity, quality and safety. The comfortable operator posture could not be achieved without considering the anthropometric criteria to analyze aspects of seat comfort, visual displays locations, pedal controls, reaches etc. When proposing novel, anthropometrically assessed and adjusted seat solutions, it is important to analyze pedal brake force exerted. In this paper 68 crane operators participated in survey, with task to test novel seat solution and corresponding exerted pedal brake force. Mark 10 EK3 200 ergonomic test kit was used to measure pedal brake force. Examined variables included: height and weight (body mass index), pedal brake force average value, deviation of each three measurements from average value and absolute measurement error. After descriptive statistics, Spearman's correlations are calculated. Besides proving novel solution, there also has been found statistically significant correlation between body mass index and mean value of force, as well as between BMI and absolute measurement error. It is recommended, in future research to enlarge sample and repeat statistical testing.

**Keywords:** Pedal brake force, BMI, crane operator, descriptive statistics, absolute measurement error

## CYBERSECURITY STRATEGY AND LEADERSHIP MANAGEMENT ISSUES

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**Abstract:** Cyberspace has become a defining dimension of our everyday lives. It affects every segment of our lives, be it the economy, politics, culture or even certain elements of our private lives. However, the services that make up cyberspace and the tools that enable them are increasingly dependent on us. The failure of these systems and services not only causes serious disruptions in everyday life, but now, in addition to material damage, they also pose a serious danger and risk to people's lives. Cyberspace and the security it provides are a fundamental interest for all countries. However, this recognition has only occurred in the last decade and a half. Since the mid-2000s, the number of countries capable of handling this recognition at the state level has been gradually increasing. The importance of cyberspace today can no longer be questioned or circumvented. Accordingly, challenges, threats and risks in cyberspace need to be addressed at a strategic level. This is best reflected in countries' strategic visions of national cybersecurity, as in addition to the global powers, smaller countries are also seeking solutions to cybersecurity security issues at the national level. These solutions seem to have different answers in each country, but they are united by one thing: security. About 20 percent of small and medium-sized enterprises operating in the European Union have some kind of information security strategy, in Hungary this proportion is similar, 17-18 percent. According to experts, the European Union is also in a bad position in terms of responses to possible data loss, while these SMEs are mostly online companies. Larger companies are already in a better position in this area: in Hungary, more than half of them have some kind of information security system, so they are able to apply the necessary procedures even in the event of an attack or data loss. The biggest problem in the protection of IT systems is the human factor, ie the attacks can still be successful mainly due to carelessness, irresponsibility and possibly lack of preparation. Developing an information security strategy, understanding the relationship between business objectives,



functions, and information security is a core interest of countries, organizations, and leaders. The preparation of strategic plans, the necessary strategic cost planning and reporting procedures, and the ways in which the costs of security investments are passed on to management must become an integral part of organizations. A key player in information security management is the head of the information security organization, which is responsible for organizing and maintaining data and information protection, providing awareness training, and selecting and implementing key metrics (KPIs) for control. The study reviews the cyber defense capabilities that Europe and within Hungary need, how to create them, and the role of the participants in all of this.

**Keywords:** cybersecurity strategy, leadership, management, risks, security, education

## **MUNICIPAL SOLID WASTE RECYCLING: MOVING FROM WASTE DISPOSAL TO RESOURCE RECOVERY IN LAGOS METROPOLIS**

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**Abstract:** The objective of this paper is to assess the constraints in wholesale recycling of the municipal solid wastes in the Lagos metropolis in spite of the high volume of daily generations. Disposal of municipal solid waste at open dumpsites appears to be the easiest way out in MSW management but the most hazardous. Emission of greenhouse gas, depletion of ozone layer, leachate that contaminate ground water and farmland, production of rodents and contaminable vectors, above all, it buries valuable reusable resources and raw materials for the industries that could obviate the need for imports. The study obtained and analyzed raw information from stakeholders in the sub-sector from selected dumpsites in the metropolis. It was discovered that the major constraint to wholesome recycling of municipal solid waste in Lagos metropolis is the absence of encouraged and sustained sorting at source as a practice. The study makes recommendations to the policy makers on how to enhance the practice of sorting municipal solid waste at source including encouraging citizens through public campaign and enlightenment to voluntarily separate their trash into various components in their homes and business places.

**Keywords:** Key words: msw recycling, waste diversion, resource recovery, reverse logistics, sorting at source

## **ARE TODAY'S INNOVATORS / EXPORTERS FUTURE EXPORTERS / INNOVATORS? A COUNTERFACTUAL ANALYSIS IN SLOVAKIA**

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**Abstract:** This paper focuses on the empirical research of the relationship between innovation and export in Slovakia. Both activities are important for increasing competitiveness and subsequent economic growth, while their interconnection stimulates the effects even more. We explore the two-way relations in the local business environment analysing the causal effects via propensity score matching and probit models. The data selection is based on an anonymous e-survey on the overview of pro-export and pro-innovation behaviour conducted from 11th February to 25th March 2019. The analysis using several matching techniques pointed to the existence of positive links. Firstly, there is on average by about 49 per cent higher likelihood of the interest in export with innovative firms than with those that do not innovate. Changing the forms of innovation and matching technologies the results oscillated between 43.6 per cent and 69.3 per cent. In the opposite direction, we found an average percentage of 28.1 per cent and oscillation between 15.7 and 44.5 per cent. Based on the results we recommend the national decision-making entities to focus external economic policy support towards SMEs' with innovative outputs and support activities of large manufacturing companies with low value-added towards the outside world.

**Keywords:** innovation, export, two-way causal effects, propensity score matching

## **COMPARATIVE ANALYSIS OF DOING BUSINESS IN ENTERPRISES AND ENTREPRENEURS BY ECONOMIC SECTORS IN THE REPUBLIC OF SERBIA IN 2019**

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**Abstract:** In 2019, the economy of the Republic of Serbia recorded a slight growth due to primarily increased investment activity (which was supported by a significant inflow of FDI), export growth and increased public and private consumption. The contribution of economic entities to the creation of GDP differs by economic sectors, but also by the forms of organization of economic entities. As enterprises and entrepreneurs make up over 90% of the total number of economic entities in the Republic of Serbia for many years, a comparative analysis of the doing business in companies and entrepreneurs in 10 sectors contributed the most to the generation of business revenues was performed. The performed ratio analysis for entrepreneurs and enterprises pointed out the basic problems faced by economic entities and created a basis for the application of multicriteria analysis. By applying the entropy and PROMETHEE method, the ranking of companies and entrepreneurs according to the economic sectors was performed, aimed at gaining the insight in which economic sectors the enterprises and in which entrepreneurs operate most successfully. The obtained results indicate that in 2019, enterprises operated most favorably in Sector B - Mining, while entrepreneurs operated most successfully in Sector M - Professional, scientific, innovative and technical activities.

**Keywords:** companies, entrepreneurs, economic growth, ratio analysis, entropy method, PROMETHEE method

## **INFLUENCES OF CRITICAL EVENTS AND INAPPROPRIATE BEHAVIOUR OF STAKEHOLDERS ON SERVICE PROCESS MANAGEMENT**

**Adrijana Jevtić, Dejan Riznić**

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**Abstract:** Modern economies are characterized by the dominant share of the service sector, both in the creation of gross domestic product and in the employment of the population. It is necessary to pay more attention to the service management process, especially considering critical events and employee behavior in providing services. Planning, organizing and controlling the process of providing services, especially due to the specificity of services, is more complex than production management. There are not many papers on service management in the Republic of Serbia. The aim of this paper is to analyze service management, from the aspect of critical events and inappropriate behavior of employees, in modern business conditions. The success of the service delivery process depends on way of management, as well as the focus on the market and the quality of services. The use of promotional actions, as well as human resources management, is also important for achieving good results.

The most efficient competitive strategy that leads to an increase in the value of the service and customer satisfaction is based on the high quality of the service supply. In this way, a long-term competitive advantage in the market can be achieved. The example analyzed in this paper showed that management of certain service processes are not so simple. The greater number of activities, the greater the number of participants, so in the end, the possibility of unforeseen circumstances is greater. Improving the service delivery process is always possible, even when the process seems ideal.

**Keywords:** service management, marketing, critical service delivery events, service delivery process

## THE IMPACT OF RECENT TECHNOLOGIES ON CUSTOMER SATISFACTION IN E-GOVERNMENT

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**Abstract:** In this paper, we discuss the importance of linking all segments of public administration, E-business, information technology and smart phones in their service. When it involves the appliance of modern public administration techniques, we should always not always speak on individual basis of e-government and e-service, but about new concepts like Emi-government and em- service. A growing wave of "digital" citizens are now demanding better government services and these projections have profound implications for service delivery. Thus, many governments have undertaken major transformations that maximize the utilization of information and communication technologies through government initiatives aimed toward facilitating a collaborative and effective management environment and enhancing the delivery of services. Citizen satisfaction might be an important and determiner for persistent use of services because it'll considerably impact on failure or success of state comes. The users are rather subtler and have tons of upper expectations. In today's digital society citizens expect from the general public administration an identical quality of the service as they receive on-line from the private sector. The users expect that the general public administration acts as a successful business. The truth is that the general public administration need to fight for its service users and has the competition. this challenge lies in their integration. Classic public administrations existed initially and later came the new ones- supported the new technologies. the event of resources planning is therein process, Evolution of resources planning. Many applications of that the system for resources come up with is consisted of ismade from the smaller software modules that perform the actual business processes at situations. The given useful field. as an example , the appliance for managing the services commonly includes the modules that change the observance of the service, foreseeing the need for the services and arising with the services. Integration of

the varied modules allows the management situations. the knowledge on the events at the foremost distant components of the administration. Present applications employed by the administration-leaders during this area, they evolve from their part into the subtle portals. That new generation of portals is straightforward to use and economical in providing integrated access to the specified information, applications and processes. These are the very groups that have difficulties in accessing the new devices and digital services. Public administration should increase the quantity of services which will provide online and will adapt them to the requirements of the users. online suppliers of services can defeat standard management particularly within the selection of services. Service users prefer sites wherever they're offered everything underneath one roof. This guarantees solutions that provide great alternative of services during a simple way. the foremost in online portals collect huge amounts dana and knowledge on the services and make them on the market to users whenever they have them.

**Keywords:** E-m-Government, E-m-Service, Public Administration, Satisfaction, information technology, smart phones

## **SOCIAL NETWORKS IN THE WORLD OF BUSINESS COMMUNICATION**

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**Abstract:** The topic of this seminar paper is the role of social networks in the modern world of business communication. Websites and professional literature were used as literature for the processed material. The topic of the paper is elaborated through four main chapters, concluding with the conclusion. The chapters are elaborated in order of importance, starting with the introduction that social networks generally describe as a very important concept today, the methods of data collection and analysis that were needed to create a seminar paper, goal and literature review. Social networks not only influence the creation of trends, but also change society. The original task of social networks was to connect users and enable them to communicate more easily. Today, communication via social networks is simplified and enables communication in any way, at any time and anywhere. Accordingly, social networks have been developed to improve the functions of business communication.

**Keywords:** communication, business, social networks, globalization, companies



## THE INFLUENCE OF MEDIA ON CULTURE IN THE 21. CENTURY

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**Abstract:** Digital technology and the benefits of scientific and technological development, undoubtedly affect the channels of communication, as well as the influence on the quality of information transfer. Due to the advent of new mass media, and continuous improvement of the same, the establishment of a specific media is becoming louder and easier to undertake, which is an adequate program schedule and it is quickly profitable. All this causes the mass media's big impact on the state of the culture, as evidenced by the example of our country. The development of particular technologies and various devices that are easy to use, have caused the occurrence of certain hyper production in the field of artistic creations. This commercial overproduction greatly affects the culture. This paper represents the influence of the media on culture in the 21st century, pointing out additional improvement of existing information technologies and works of art.

**Keywords:** culture, media, influence, technology, development, 21.century

## **COMPARATIVE STUDY ON GENDER EXPECTATIONS ABOUT THE REQUIRED DIGITAL ENTREPRENEURSHIP SKILLS**

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**Abstract:** The environment of 21st century encourages many people to face the "digital entrepreneurship" and for the successful business development it is important they to have adequate skills. The aim of this paper is to discuss some of the outcomes from a comparative study about gender expectations on the required key digital entrepreneurship skills. The research tasks are: (1) to outline the essence of the digital entrepreneurship and the required / necessary skills through which the entrepreneurs would have been successful in the digital age; (2) to design a research methodology to study the attitudes of males and females regarding the skills of young entrepreneurs in the digital world; (3) to summarize the findings from a survey conducted in Bulgaria in 2020 among 774 people and analyse the differences in the opinions of the two gender populations; (4) to present some of the key conclusions and formulate a few proposals about further studies and practical applications. The analyses in this paper could be useful to other researchers, interested in digital entrepreneurship skills on gender approach, as well as to digital entrepreneurs.

**Keywords:** digital entrepreneurship, digital entrepreneurship skills

## **DELPHI METHOD APPLICATION TO FIND A MORE EFFICIENT MODEL FOR EVALUATING THE PERFORMANCE OF ADMINISTRATIVE SERVANTS**

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**Abstract:** The aim of this paper is to evaluate the problems and challenges arising from the application of the process of evaluation of administrative servants and to identify the possibilities for changes in the process, in order to find a more efficient model that would maximize the benefits of the evaluation. The research is conducted by using the method of qualitative forecasting – the Delphi method, with the application of survey questionnaires in three rounds. Participants in the study are nine managers employed in a state institution, who answered the questionnaires between April 22 and May 12, 2020. The results of the research show that the evaluation procedure is not applied as imagined and thus does not give the intended results for which it was introduced. It is necessary to change the system for evaluation of administrative servants, either by revising some of the provisions in the current legislation, or by introducing a completely new system.

**Keywords:** qualitative forecasting, Delphi method, administrative servants, management of the effect, evaluation, work competencies

## LEADERSHIP ATTITUDE EXPECTATIONS IN AGRICULTURE

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**Abstract:** Numerous researches were conducted on what abilities and skills a leader needs to have. The research was directed at the leaders of various organizations in terms of both size and scope of activities, but for some reason the agricultural sector was always left out of the research as a stepchild. This may be due, among other things, to the fact that a significant proportion of farms operating in Hungarian agriculture - almost 98% - are individual farms. However, according to statistical data, their number has been steadily declining in recent years, as many of the older, single farmers have stopped production [KSH (2016)]. Previously, it was not relevant to research what managerial competencies they consider important, but there is an increasingly urgent need to change attitudes in Hungarian agriculture, both in terms of organizational cooperation and generational change. The present study is aim to find out what competencies Hungarian farmers expect from a manager during the development of a possible cooperation.

**Keywords:** agriculture, managerial competencies, agriculture, generations

## SEASONAL VARIATIONS AND SOURCES OF HEAVY METALS IN URBAN AREA

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**Abstract:** According to World Health Organization (WHO) air pollution caused by particulate matter (PM), is identified as one of the leading risk factors of mortality in the world. Various heavy metal elements are constituents of ambient PM, and most of them are toxic and chemically very stable, which means that transport and dispersion of PM can expand their impact far from their source of origin. In this paper seasonal variations and sources of heavy metals in atmospheric particle matter (PM<sub>10</sub>) were investigated. The study was conducted in time period 2014-2018 at four different locations in urban area in city of Bor, Serbia. The PM<sub>10</sub> samples collected during warm and cold seasons were analyzed for four heavy metals: Lead (Pb), Arsenic (As), Nickel (Ni) and Cadmium (Cd). Sources of metal elements have been investigated by Principal Component Analysis (PCA).

**Keywords:** heavy metals, seasonal variation, PCA

## INTERNET FINANCIAL REPORTING PRACTICES IN BOSNIA AND HERZEGOVINA, SERBIA AND MONTENEGRO

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**Abstract:** Web based financial reporting has become a norm today and has changed traditional forms of corporate reporting. Internet Financial Reporting (IFR) is an inseparable part of the efficient and developed capital markets. In most cases investment public, particularly small investors based their company's performance analysis entirely on the data available on-line. For the companies aiming to maximize their fundamental value and shareholder wealth it is necessary to increase the scope and quality of information provided on-line.

The objective of this research is to analyze the level of Internet financial reporting and to examine the predictors of the IFR index for companies listed on Sarajevo, Banja Luka, Belgrade and Montenegrin Stock Exchange. We have created IFR index for all four markets and we found a limited voluntary disclosure of companies in all cases. By estimating multiple cross-section regression, we explored the influence of size, profitability, financial policy and market activity measures on the IFR. We found that size measured by total assets, total revenues or total market capitalization influences positively the level of IFR. Financial policy measures have significant and negative impact on the level of the IFR in all analyzed markets. Return on equity is significantly explaining the IFR index on Sarajevo Stock Exchange, while stock market turnover is significantly influencing the IFR on the Belgrade Stock Exchange. In general, larger companies disclose more information, while companies with more own financing or larger equity disclose less information on their websites in all analysed markets.

This article confirms past findings about unsatisfying level of IFR in Western Balkan countries. This indicates the weak role of a market regulatory authority in the analysed markets.

**Keywords:** Internet financial reporting, SASE, BLSE, BELEX, MNSE

## **MULTI-CRITERIA ANALYSIS OF AIR POLLUTION IN THE URBAN ENVIRONMENT NEAR COPPER SMELTER**

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**Abstract:** The aim of this study was to examine the level of air pollution around copper smelter and to identify locations with highest content of pollutants' concentration in the air. The study was conducted in the period 2014-2018. in the city of Bor (Serbia) at four different locations. The measuring stations were located in the urban part of the city in close vicinity of the copper smelter. During this period, the concentration of sulfur dioxide (SO<sub>2</sub>) and suspended PM<sub>10</sub> particles were monitored, as well as heavy metals from suspended PM<sub>10</sub> particles such as: lead (Pb), cadmium (Cd), nickel (Ni) and arsenic (As). The obtained values were compared with the limit values set by European Commission. The multi-criteria PROMETHEE method was used in order to rank locations according to the level of pollution, based on the set parameters. In addition, the GAIA plane was used to visualize the areas in the city of Bor with the highest air pollution.

**Keywords:** air pollution, suspended particles PM<sub>10</sub>, heavy metals, SO<sub>2</sub>

## **EFFECT OF MOTIVATION FACTORS ON EMPLOYEES’ JOB PERFORMANCE: EVIDENCE FROM ALBANIA**

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**Abstract:** Employee performance is important to public organizations. The public sector by considering the motivating factors and properly motivating its employees will affect the increase of employee performance. Therefore, the motivation of employees in the public sector is very important. The purpose of this paper is to explore the effects of motivation factors and job performance for public sector employees. The dependent variable in this study is job performance. Independent variables are motivating factors, namely payment, promotion, work environment, superiors’ collaboration and co-workers collaboration. According to the purpose of this study there are following the qualitative and quantitative methods. The research instrument used in this study is a structured questionnaire. The list of the public organizations was obtained from Vlore Employers’ City (Albania). A total of 140 questionnaires were sent to the selected organizations. A total of 110 questionnaires were returned but only 97 useable. Secondary data for this study had been collected from journals articles, books and newspaper, which contributed to the review of literature. Data analysis was performed using SPSS. Multiple regression analysis using enter method was used to determine the relationship between the independent variables and the dependent variable. The results show that there is significant relationship between payment and job performance. However the relationship between promotion and job performance, work environment and job performance, supervisor’s collaboration and job performance, and co-workers collaboration and job performance were found to be not significant

**Keywords:** motivation, job performance, public sector employees



## INCLUSIVE KNOWLEDGE ECONOMY FOR THE MANY - INSTITUTIONAL AND LEGAL ASPECTS

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**Abstract:** More than thirty years since the fall of the Berlin wall the countries in the South-Eastern Europe continue their search for establishing an inclusive, sustainable and innovate model for social and economic development. Neither the imported models of standard market economy and the rule of law, advocated by international institutions, such as the IMF, the World Bank, the OECD and the European Commission, nor the examples of Central European countries fit the purpose and needs of the countries in the region, their businesses and their people. Countries in the region remain socially divided, their economic and social potential unexploited, while talented younger generation see their perspective abroad.

In the Covid-19 world we can see again the importance why every region, why every country should be able to develop and administer high quality public institutions, including high quality of public health services, high quality education, high quality public institutional support for entrepreneurs to secure sustainable and inclusive long-term development. The old dilemma, presented by the World Bank model From Plan to Market is becoming increasingly replaced with the model of strategic partnership between the transparent and accountable public sector with the innovative private sector. Such an advanced model of decentralized partnership between the public and private sectors assume several crucial ingredients that are currently missing in the context of many countries in the region: institutional innovations beyond traditional institutional orthodoxy, mutual trust and accountability of key stakeholders, cooperative cooperation between small and medium size companies in place of traditional model of competition, high-quality education and dissemination of knowledge in place of codified know-how, public institutional support to enable access to long-term finance, know-how, technological skills and all other necessary resources for the majority of young entrepreneurs, start-ups and other traditional small and medium size businesses.

Strong tradition of industrial development, education, relatively high quality of public services in the region in the late twentieth century should be expanded

and adjusted to the needs and opportunities of the modern knowledge economy of the twenty-first century. International institutions, international finance can help, but it is primarily the task of the policy-makers, entrepreneurs, local and regional initiatives, groups of experts, trade unions and civil society to articulate development models that would tap the real social and economic potential of the countries in the region to climb the ladder of development from (semi)periphery.

**Keywords:** Inclusive development, Knowledge Economy for the Many, Institutional Innovations, Public - Private Strategic Partnership, International Integration, Core – Periphery

## **EFFECTIVENESS OF CRYPTOCURRENCY PORTFOLIO MANAGEMENT BEFORE AND DURING COVID-19 PANDEMIC**

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**Abstract:** This paper presents the diversification role of cryptocurrencies by analysing the possibility of creating new investment opportunities based on historical data. Applying different portfolio models (1/N, Markowitz model, minimum variance model, maximum return model and portfolio model with the highest Sharpe ratio) we analyse whether there are diversification effects, as well as whether the inclusion of gold and/or market index to cryptocurrency portfolio leads to improvement in portfolio performance measured by Sharpe ratio. We also analyse whether the implementation of a buy and hold strategy with selected portfolios represents a good investment decision in a period of big financial markets turmoil caused by the emergence and expansion of COVID-19. Data were collected for the period from May 26, 2014 to June 30, 2020, on a weekly basis.

The results we obtained indicate the fact that there are diversification effects by creating a portfolio of cryptocurrencies, as well as that the addition of gold and/or market index significantly improves the efficiency of the cryptocurrencies portfolio. The buy and hold strategy from December 2019 till June 2020 proved to be a good investment decision in the case of the portfolio of cryptocurrencies and gold, while the portfolios that include stock market index negatively affects the returns of the buy and hold strategy. These results indicate a significantly faster recovery of the cryptocurrency market compared to traditional financial markets.

**Keywords:** cryptocurrencies, mean-variance analysis, diversification, Sharpe ratio, COVID-19 Pandemic, buy and hold strategy

## **SURVEY OF METHODS FOR MODELING THREATS FOR INFORMATION SECURITY IN THE CONTEXT OF SUSTAINABILITY AND REINDUSTRIALIZATION OF INFORMATION SECURITY**

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**Abstract:** The dynamic development of information and communication technologies, as well as the ongoing sustainable processes of digitalization in all spheres of the economy, social and public life, determine the growing need to protect the information assets of organizations and economic entities. At the recent time, a huge range of tools and approaches for compromising information security are widely available, which can result in loss of competitive advantage, image, collapse of trust and significant financial damage.

On the other hand, development of information and communication technologies, significantly affects the e-business system of organizations and economic entities. In many of them, the system has been evolving over a relatively long period, which, in the context of the ICT life cycle, is raising the issue of mandatory software upgrades. In such context, organizations and economic entities naturally focus on the process of reindustrialization of information technologies. Among other issues that can be solved in the process of reindustrialization of IT, at the moment there should be a significant emphasis on issues related to information security modeling, affecting security policies, software development, national and international regulations, and other. The present paper examines the methods for modeling information security used in the process of reindustrialization of IT assets at the University of Forestry in the context of achieving sustainability in the field of information security management of information systems.

**Keywords:** reindustrialization of IT, information security, e-business, information systems.

## **DEVELOPMENT OF DIGITAL COMPETENCIES AND SKILLS IN THE FIELD OF USE OF CLOUD SERVICES AND ELECTRONIC COMMUNICATION**

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**Abstract:** The permanent positioning of information and communication technologies in organizations and economic entities at present time as part of various basic and auxiliary business processes, determines the crucial importance of digital skills and competencies of executive and management personnel at all levels. As a result of the natural processes of development of the e-business system, including the migration of traditional business processes to their electronic analogues and the growing importance of electronic information assets, organizations and economic entities must pay increasing attention to the skills of their employees in the field of knowledge and application of contemporary information and communication technologies. This process should be related not only to the requirements in the selection of personnel members, but also to additional or follow-up training, both in connection with the development of the e-business system of the organization and maintaining a high level of awareness of various aspects of information and communication technologies. The problems with their misapplication or misuse can lead to leaks of critical business data, financial losses, outflow of users or loss of competitive advantages. In the recent years, opportunities for remote work of employees (home office, business trip, work from a branch office, etc.) are becoming more widespread, especially important in circumstances of epidemics. The present paper examines the current state of the required digital skills and competencies related to the application of remote working methods, work in the cloud environment and the relationship between education and business, as well as specific results related to surveys of different groups of consumers as part of the labor market. Specific problems related to information security have been studied, which must be taken into account in connection with the successful and most seamless integration of these technologies in the e-business system of organizations and economic entities and in the formation of requirements for the members of the personnel.

**Keywords:** digital competencies, e-business, cloud services, remote work.

## **DEVELOPMENT OF A MODEL SYSTEMS MANAGEMENT FOR REGIONAL BUSINESS ECOSYSTEM FACTORS**

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**Abstract:** The acceleration of global post-industrial transformations and the expansion of spatial competition necessitate the formation of entrepreneurial ecosystems at the meso-level as one of the promising forms of implementing economic entrepreneurship policies. The authors have developed an operator model which allows systematically managing the factors of the business environment that lead to the development of the entrepreneurial ecosystem through «knots of growth» in the respective periods of development. The application of this model makes it possible to comprehensively solve the problems of the social and economic development of the territories, increase their sustainability, reduce social tension and increase employment, etc. Paper findings brings evidence of complete model of this type provides a variety of characteristics of the business environment and describes the dynamics of change taking place in the regional socio-economic environment.

**Keywords:** Ecosystem approach, entrepreneurial environment, entrepreneurial ecosystem, regional development

## RESEARCH ON ACCIDENT SITUATIONS OF CRANE TRANSPORT SYSTEMS

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**Abstract:** Although in recent years more and more attention is paid to risk-based maintenance techniques and technical diagnostic methods are being implemented on an ever-increasing scale, cranes still participate with as much as one third in all deaths in certain types of industry. In line with that, the subject of this research is the verification of an instrument for the investigation of accident situations of the crane transport system. After conducting a factor analysis and reliability analysis, it was confirmed that the instrument with 8 dimensions of different weight factors can be used as valid and reliable. Data were collected in 51 domestic companies, where crane transport systems are used. The mean value of collected data shows that the examination of accident situations of the installed crane transport system is at a very low level in the domestic industry - 18.95 out of 75 points. The proposal of further research is to link the obtained data with other variables that affect the operation of the crane transport system, such as the commitment of management to risk management, training of maintainers and operators, prescribed work procedures, process safety information, change management, occupational safety and machine inspection procedures.

**Keywords:** crane transport system, risk, accident, factor and reliability analysis

## **ENVIRONMENTAL RESPONSIBILITY OF CEP OPERATORS DURING THE PANDEMIC SITUATION**

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**Abstract:** The declaration of a state of emergency on the territory of the Republic of Serbia, caused by the virus COVID-19, heavily affected economy and all aspects of people's lives. The newly introduced measures of safety and restrictions on movement affected the needs of people and changed their demand for products delivery. Such situation with an unstable market, new restrictions and business regulations has also had a significant impact on the business of courier, express and parcel (CEP) companies, especially in the urban areas. However, whereas the most companies fought for the survival, CEP companies are among the rare winners in the COVID-19 pandemic, who have experienced an increase in business activities. Therefore, their responsibility for all aspects of sustainable development should follow their strength in new business conditions.

The sustainable development is based on economic, societal and environmental measures. However, during the state of emergency, societal and economic measures were prioritized, whereas the environmental aspect was marginalized. The paper purpose is to shift the focus on the substantial importance of environmental aspect and to indicate the possibilities to keep it in the line with business goals even in pandemic situation. The evidences of some case studies, which represent a good practice among the CEP companies, are presented. A SWOT analysis is used to summarize the impact factors on CEP companies who want to incorporate the environmental measures and activities into the business operations even during the pandemic situation.

**Keywords:** CEP operators, sustainability, environmental measures, resilience, pandemic situation



## RISKS IN CRISIS AND PANDEMIC SITUATIONS

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**Abstract:** During their own lives, people try to maintain a balance between external demands and their own overall needs in proportion to the available capacities. In most situations, a person harmonizes with the current requirements in real circumstances, and from that arises his meaningful and harmonized life. In the circumstances of sudden, unexpected, crisis and catastrophic situations, the new circumstances very quickly change the practical situation for the worse, when in the future they can exceed the world capacities that should be focused and have an adequate response to them. One can also ask a question that is really within the limits of harsh reality, how it is possible in the achieved development format of almost all areas of life and work, that only one circumstance at the moment puts humanity in a situation, how to survive or wait for tomorrow. Crisis, depending on when it refers to (in this paper to the whole world), means a sudden situation, its occurrence and occurrence caused by the occurrence of unpredictable destruction, which can have consequences of difficult to comprehend scope and scale. However, even though we have declared the 21st century a century of knowledge, is it possible that we are not able to know the dimension of our own ignorance? How is it possible that in the achieved conditions of life on earth, human life and work will be almost totally stopped a day. The very next day, the general struggle of humanity for life begins, and it can be said for survival on the planet earth. The paper provides an analytical overview from the technical aspect of the current scenario, catastrophic and crisis proportions through the levels of vulnerability and their risk thresholds for the survival of the human community in circumstances when it is directly endangered.

**Keywords:** Crisis, catastrophe, pandemic, knowledge, risk

## SYNERGY OF RISK OF MIGRATION OF POPULATED PLACES

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**Abstract:** The process of family relocations of households from one location to another is quite complex and complex in relation to the situation as it seems at first glance. The reasons for such activities are the progress of mining works in the area of surface coal exploitation, and for that reason it is necessary to perform the same. Here, in principle, different interests are delegated from one side of the company and the local population in populated places, which must be dislocated to another location. In some cases, complete settlements, or partially half of the settlement, are moved to a group of houses and individual households. The process itself is complex, atypical, in certain situations with each household specific to almost uniqueness and uniqueness, complicated and brings with it the creation of more or less conflict situations. Although most of this process of location change is regulated by legislation with delegated authority, from whose and what types of obligations of entities due to when settlements are relocated to entities that are relocating, there are realistically high thresholds of risk of default, in part or at least not in full obligation for all stakeholders. How to minimize conflict situations in such new circumstances, stressful situations, and the overall potential damage to all stakeholders, as well as reduce the overall risk potential, which is a very complex problem that is evident and needs further investigation. The paper presents the experience of continued research of the author of the paper with new available data in new circumstances that affected the country, the world and the whole planet, conditioned by a large viral pandemic with attempts at realistic, broad and multidisciplinary observation and analysis of the problems.

**Keywords:** Settlement, relocation, pandemic conflicts, interests, risk

## **THE INFLUENCE OF WORK SYSTEMS AND TEAM BUILDING ON ORGANIZATIONAL SUCCESS IN A NIGERIAN MANUFACTURING COMPANY**

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**Abstract:** In the current knowledge economy, work system and team building have become a prerequisite for organizations who want to survive in a highly competitive business environment. Since employees are essential assets in any organization; the kinds of work systems adopted by the managers determine the quality and performance of employees vis-à-vis organizational success. Unfortunately, an extant examination of contemporary management literature revealed that the roles of work systems and team building in organizational development are highly under-researched. Therefore, the study investigates the role of work systems and team building on organizational success. The study utilized system theory and group formation theory to explain the role of work systems and teambuilding on organizational development in a manufacturing company, Ogun State, Nigeria. Also, descriptive survey design was adopted in the study. Multi-stage sampling techniques were employed to select respondents while a self-developed questionnaire was used as an instrument for eliciting information from the respondents. Data collected was analyzed using descriptive and inferential statistics which include simple percentage distribution, regression analysis and chi-square test. The result revealed that work systems accounted for 50.6% of the total variance in team building in a manufacturing company in Ogun State, Nigeria. Also, the study showed that team building accounted for 21.9% of the total variance in organizational performance in a manufacturing company in Ogun State, Nigeria. Moreover, the finding unveils the relationship between work system and work team effectiveness as 27.250 and 34.080 respectively. Besides, the study established a significant relationship between work team effectiveness and organization development as 17.580 and 24.402 respectively; this implies that work team effectiveness determines organizational development in manufacturing companies in Ogun State, Nigeria. The study established that in a bid to make employees productive, innovative, skilful and resourceful in contemporary work

organization there is need to for managers to have in place flexible work systems that will support workgroups activities towards accomplishing organizational objectives which in turn lead to organizational development.

**Keywords:** Employees, Performance, Work System, Team Building, Organizational Success

## THE ETHICAL FOUNDATIONS OF MODERN MANAGEMENT METHODS

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**Abstract:** Rapid strengthening of general potential at the disposal of modern humanity, taking into account continuous development of science and technology, as well as the global connection and interdependence of business entities, leads to a change in the paradigm for achieving basic goal of a business entity, so that appropriate and continuous observance of relevant ethical principles of respecting interests of employees, consumers, company owners/shareholders, other stakeholders, as well as following the basic principles of respect and observance of public interest and social responsibility, become a counterpart and a prerequisite for financial profitability. If a certain business entity aspires to achieve the basic goals of its existence, then the methodology of entity's operation must be based on certain relevant ethical principles, beliefs and attitudes. Modern business entities that will put ethics on an appropriate axiological pedestal and will recognize ethics as a prerequisite for successful business activity and also as an essential prerequisite for their own profitability, will be those entities that will provide a basic comparative advantage over the competition and will build assumptions for long-term sustainable business development and prosperity.

**Keywords:** business ethics, morality, social responsibility, sustainable development

## THE IMPORTANCE OF THE BOSS PLATFORM FOR THE DEVELOPMENT OF ENTREPRENEURSHIP IN THE ACADEMIC ENVIRONMENT

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**Abstract:** The sudden development of the market, stimulated by globalization on all levels, leads to an ever increasing need for the input of fresh knowledge, efficiency and investments. The modern economy recognizes knowledge and innovation as the most important resources, the most profitable products and the basis for all successful and advanced business. The academic society is becoming more and more recognized as a key component in national innovation systems, therefore it is necessary that a sense of entrepreneurial spirit is developed in this field. Universities and research organizations are increasingly expected to intensify cooperation not only with high-tech organizations but also with small and medium enterprises. This paper showcases the “Business Opportunity Support System“ platform (BOSS platform), which responds to all the needs previously stated . The aim of this paper is to point out the value of the existence and the need for the advancement of such platforms, using the aforementioned tools for self-assessment, planning and the growth of business opportunities, which will be applied to a project, which did not employ a system of this kind previously.

**Keywords:** knowledge management, entrepreneurship, BOSS platform, innovation

## MANAGING THE RISK OF PLASTIC WASTE TOWARDS ENVIRONMENTAL SUSTAINABILITY IN NIGERIAN TERTIARY INSTITUTIONS

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**Abstract:** Managing the risk of plastic waste in contemporary societies has become a monumental and global undertaking. This is largely due to the increase in production and consumption of plastics in modern-day consumer societies which contributed to the global plastic waste volume and environmental pollution. Evidence-based researches have shown that plastic pollution is extremely interfering with the process of attaining human and social development in both developed and developing countries, however; to tackle this global challenge, in the context of sustainable development, it requires combined and multi-dimensional efforts. With this reality, tertiary institutions as the citadel of knowledge production and circulation have significant roles' to play in mitigating the byzantine effects of plastic waste. Hence, this study set out to investigate the social dimensions, processes, and strategies of managing the risk of plastic waste towards environmental sustainability in Nigerian Tertiary Institutions. The study adopts social action theory and sustainable development perspective as a theoretical guide. It also employs cross-sectional and descriptive design with the use of qualitative (in-depth-interviews) and quantitative (questionnaire) data. The data were analyzed using descriptive statistics and qualitative content analysis. The findings of the study revealed the various dimensions, social processes, and strategies involved in managing the risk of plastic waste in contemporary Nigerian educational institutions. Also, the study recommends that an integrated plastic waste management strategy (IPWMS) that involves plastic waste tutoring, sorting, trading, rewarding and recycling should be deployed in tackling the plastic waste and pollution in Nigerian tertiary institutions.

**Keywords:** Environment, Plastics, Integrated Waste Management Strategy, Sustainability, Nigeria

## **GIVING A CHANCE FOR THE FUTURE. HOW CAN THE STUDENT -, AND EMPLOYEE VOLUNTEERISM SUPPORT THE LOCKDOWN GENERATION?**

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### **Abstract:**

(1) Background: The recent extraordinary COVID-19 pandemic is not just the biggest healthcare challenge of this century than it disrupts jobs (mass unemployment or reduced working hours on the labour market), economy (some sectors are highly affected, e.g. tourism) and education, results in development challenges like poverty or inequality. For those who are the most vulnerable to social and economic uncertainty need more help and volunteering can be more important. One of this affected population is the so-called lockdown generation. As ILO (2020) suggested those young people (15-24 years old) belongs here, who are facing multiple shocks from the pandemic and who are likely to suffer severe and long-lasting impacts from COVID-19. Indeed, this generation would be ready to newly enter the labour market, bears the knowledge and has its resources but misses the experiences and opportunities. One possible solution might be the employee-, respectively students volunteering programs. This paper aims firstly to observe the certain situation of lockdown generation, afterwards it examines how formal volunteerism can work during the pandemic, finally how these two could be joined. Formal volunteerism (employee and student volunteerism are elementary parts of it) bases on the third part model, where governments, non-profit organizations and corporations (i.e. educational institutes and companies) should work together. However, in this extraordinary situation, all of them are concerned and concentrating on how to mitigate the impact of COVID-19, hereby this young, strong generation has started some bottom-up voluntary actions. Therefore, we are just in time to discover this topic, hereby inform, encourage participants.

(2) Methods: The first part of this paper structures the up to date literature of employee volunteering and introduces lockdown generation and its certain situation on the current labour market. The abovementioned third part model is



examined through secondary data analysis sourced from international statistical databases. Altogether 43 countries are selected and the following indices are explored: 1.) about the current COVID-19 impacts, Interactive Covid-19 Data by Location, 2.) about the governments' volunteerism support: The Index Of Philanthropic Freedom, 3.) about the formal volunteerism heritage and habits in each country: UNV Volunteering by country and ILO volunteerism statistics. Data are analysed with various inference statistical techniques and are extended with case studies and findings from studies about employee volunteerism.

(3) Results: Findings prove that those countries, where formal volunteerism has a long-term heritage and well-managed structure, employee volunteerism will be an active and advantageous part of the labour market. Besides of this employee volunteerism is, whit all of its fruitful advantages, an essential part of CSR, accordingly, employee volunteerism is also the company's interest, moreover a brilliant HR tool. Due to the definition volunteerism is free time giving, therefore a solution for how to employ and engage trainees, young employees even during the pandemic. Of course, the health and safety restrictions have to be taken into consideration apart from this, online volunteerism or skilled based volunteerism could happen directly from employees' home (remotely).

(4) Conclusions: Due to the realignment of roles and participants in the volunteering sector, it requires stronger relationships and sectoral strategies among the governments, competitive sector and nonprofits. The purpose of this paper is providing managerial implications and best practices in order to cope with and calm down pandemic caused harms.

**Keywords:** formal volunteerism, employee and student volunteerism, lockdown generation, pandemic, labour market

## MANAGEMENT OF SUSTAINABLE CITIES – A SINGLE INTEGRATED APPROACH

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**Abstract:** In the last few decades, cities have been centers with increased economic activity, innovation and jobs. The pace of development of urban areas is accelerating, which leads to the need to focus attention and study the changes that are taking place in cities. The economic, social, cultural and environmental dimensions of urban life need to be intertwined in a single integrated approach in order to achieve economic development, education, social inclusion and environmental protection. The subject of this report is sustainable cities, and its theme is the concept of sustainable development.

The aim of the research is based on a theoretical review and analysis of various statements related to sustainable development in settlements, to present those of them to be used to define conclusions and guidelines for urban development.

This research was supported by Bulgarian National Science Fund grand.

**Keywords:** sustainable, development, cities, environment, concepts

## **TECHNICAL COMMITTEES AS PART OF THE QUALITY INFRASTRUCTURE IN SERBIA**

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**Abstract:** Quality infrastructure (QI) is composed of an institutional complex that encompasses services of metrology, standardization, certification, accreditations, and conformity assessment. When it comes to standardization, standards are adopted, prepared, and translated by technical committees. This paper strives to analyze the work of members of committees at the Institute for Standardization of Serbia to show the structure of QI experts considering their position, type, size, and innovativeness of their organizations and number and length of engagement in the committees including it's a category. The results showed that most members of the committees work in large organizations, in executive positions, and see their organizations as innovative. The dominant activity of the organizations in which the respondents work belongs to the electricity and mining industry. Most experts are engaged in only one commission for a period of up to 3 years or more than 10 years, respectively. When it comes to certain committees, one of the most numerous is CASCO (Conformity Assessment Committee).

**Keywords:** Quality Infrastructure, Technical Committees, Standards, Experts

## **GUIDELINES FOR TRANSITION FROM SURVIVING STRATEGIES TO SUSTAINABLE REGIONAL DEVELOPMENT OF BULGARIAN BLACK SEA CITIES**

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**Abstract:** The report reviews the post-totalitarian development of the Bulgarian Black Sea cities. Special emphasis in the study is placed on the problems in the development, ecology and infrastructural improvement of the big cities on the Bulgarian Black Sea coast - Varna and Burgas. The problems - ecological, structural and socio-economical of the smaller Black Sea municipalities - Shabla, Obzor, Nessebar, Pomorie and others are partially considered in the summary. Based on the problems of urbanization in the conditions of the socialist totalitarian system in Bulgaria, conclusions and findings are made about the nature and peculiarities of the formed urban communities in the post-totalitarian period of the development of the Republic of Bulgaria. The thesis is defended that the future development of the Bulgarian Black Sea cities should be based on environmental friendliness and sustainability. They should strive for a coastal fluidity, with a transition from one urban environment to another, with a panorama of a cultural collage that combines the national aspects of urban environment and architecture with the challenges of technology and modern transport and communication infrastructure. An attempt has been made to highlight the positive and negative changes in the development of the Black Sea cities over the last three decades. The changes should create conditions for sustainable prosperity both in our large sea ports - Varna and Bourgas, and in the small Black Sea resort towns.

**Keywords:** sustainable development; transition from central to market economy; maritime economy; problems of urbanization; ecology

## **GUIDELINES FOR IMPROVING EDUCATIONAL MANAGEMENT IN THE REPUBLIC OF BULGARIA**

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**Abstract:** The report examines the main problems of educational management in the Republic of Bulgaria in the context of the country's membership in the EU. The main landmarks in the educational management in the conditions of market economy in the Republic of Bulgaria are highlighted. The exhibition focuses on the principles of school management in market conditions. The main functions in the system of educational management are also interpreted. Special attention is paid to cultural aspects of educational management. It is argued that modern information and communication tools provide many opportunities that, multiplied by the infinite amount of information shared in the "world wide web", are a powerful tool for tackling the challenges of modern education. A justification has been made for the fact that the application of modern information and communication technologies also supports the development of two other key competencies in students - digital competence and the ability to learn independently. Having them is a good basis in the personal development of students and provides new opportunities for professional realization in the future.

**Keywords:** educational management; key competencies; principles of school management; cultural aspects of educational management

## **ONLINE TEACHING AND LEARNING DURING THE CORONAVIRUS CRISIS. A ROMANIAN PERSPECTIVE**

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**Abstract.** The coronavirus crisis has challenged higher education institutions in many new and unexpected ways. As universities have to take radical measures and make major efforts to slow the contagion and to better understand the virus, they are forging new paths in crisis management. This brings both challenges and opportunities to Europe's universities, in particular in relation to digitalisation and digitally enhanced learning and teaching, Open Science, research, quality assurance, university autonomy, funding and civic engagement. This paper tells the story of how the educational process was changed by the COVID-19 crisis and how the authors and their institution responded to this change. It presents the tools used for switching to online education, challenges and solutions, two brief case studies and the global conclusions drawn. This is a local viewpoint mostly from within the Transilvania University of Brasov.

**Keywords:** online education, teaching online, SWOT, Covid-19

## **ROLE OF RFID IN DATA EXCHANGE FOR EFFICIENT CONTAINER LOGISTICS**

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**Abstract:** Information systems play a critical role in the inland container movement which can support in various cost control methods such as optimizing transportation, reducing inventory, managing future orders through data exchange applications. A significant part of the total cost in container movement is due to the inland transportation of containers. In this paper, a solution based on RFID (Radio frequency identification) technology is proposed in one of the large inland geographical economy with higher container delivery distance from sea port to inland depot. This application will be reliable and efficient for the port processes and contribute in reducing the dwell time of shipping container by providing near real time visibility of containers. Tagging each container with a passive RFID tag will support in near real time identification and tracking of container by fixed readers installed at strategic locations such as container freight station, toll plaza's, empty yards and inland container depots. Such a system will enable near real time data exchange between different entities of container supply chain and increase the productivity by reducing dwell time and congestion time.

**Keywords:** Container logistics, RFID, Port, Productivity, tracking, smart container

## **USAGE OF CORRELATION MODELS TO BANKING INDICATORS IN THE WESTERN BALKAN COUNTRIES**

**Milos Dragosavac**

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**Abstract:** Banking indicators reflect the size, value, success, as well as the efficiency of banks' operations. Banks must strive to improve them in order to function and survive in the financial market in competitive market conditions. In this way, banks will be able to achieve positive results in their operations and thus create conditions for long-term growth and development. The research was conducted in the Western Balkans region in five countries: Serbia, BiH, Montenegro, Albania and Macedonia in the period from 2013 to 2019. The most significant problem facing the entire banking sector of the Western Balkans is the high level of non-performing loans in total lending activity. The paper analyzes the indicators, which to some extent affect the level of non-performing loans. The statistical analysis starts from determinants such as: profitability, capital adequacy, gross domestic product per capita. The aim of this paper is to show the adequate state of the banking sector in the countries of the Western Balkans through fundamental business indicators. The analysis will use Pearson's correlation coefficient, where the levels of dependence between the observed variables will be determined.

**Keywords:** CAR, ROE, ROA, NPL, BDPpc, Pearson's correlation coefficients



## **INTEGRATING HUMAN RESOURCES AND CUSTOMER RELATIONSHIP MANAGEMENT FOR STUDENT SATISFACTION IN HIGHER EDUCATION: GAINING A COMPETITIVE ADVANTAGE**

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**Abstract:** Human resource management, as a scientific discipline and practice, provides valuable recommendations and guidelines regarding the organization of functions and processes. If organizations adhere to these proposals, combine them with best practices and lessons learned, they increase their success in achieving organizational goals and specific business goals. Human resource management in the field of education due to different forms of financing the operations of educational institutions, management models, regulatory constraints, and the like must take into account several different variables in creating an optimal model of function and process.

Through the implementation of customer relationship management, higher education institutions adopt adequate instruments that adequately measure the real needs of students, but tailor their service in accordance with the fundamental requirements of the knowledge market. Thanks to such measurement indicators, the satisfaction of students as users of services is monitored, which gives the higher education institution a clearer insight into the current situation when it comes to education needs, but also enables comparison with other educational institutions of the same or similar rank.

The paper analyzes available library and other sources by searching for these variables, and gives an example of good practice in the form of a case study – Information Technology School, ITS - Belgrade, which illustrates how caring for human resources is also caring for students and in a specific way connects human resource management and customer relationship management.

**Keywords:** Human Resource Management, Higher Education Institutions, Case study, students, Customer Relationship Management, stakeholders

## **THE MAIN MANAGEMENT, FARM ORGANIZATION AND MARKET LESSONS OF ORGANIC FARMING BASED ON THE HUNGARIAN EXPERIENCE OF THE LAST DECADES. THAT IS, WHAT NEEDS TO CHANGE FOR SUCCESSFUL PRODUCTION AND SALES?**

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**Abstract:** Since the 1990s, the popularity of organic farming has increased significantly. By the turn of the millennium, a growth trajectory had been assumed that had characterized the Chinese economy in recent years. However, this did not happen. In Hungary, too, and in most countries this growth rate has slowed down, it has been where it has fallen. In Hungary, we can currently see stagnation in the size of the area and the number of producers. What was behind the recovery and the turndown? One of the main reasons is that smaller producers with poorer conditions considered exploring the possibility of breaking out in the transition to organic production. Lack of capital, worse arable land, lack of well organization methodology. These were able to be offset for a few years by a significant increase in turnover in organic markets. On the other hand, we see that the basic management and financial problems can only be temporarily remedied by an emerging market. The other producer groups are the larger units that produce for export to Western Europe, which typically export raw materials. Where these raw materials are processed with the available processing capacities and then some of them are shipped back to the markets of the producing country, selling them at a significant margin. This indicates a structural problem. There is no processing capacity with significant added value. The aim of the study is to show what has changed in recent decades, what management, organizational and other issues we have progressed in, what has not changed. Based on production data, proving that organic production can be viable, but the lessons need to be drawn and changed, because without it there is no successful neither Hungarian or regional production.

**Keywords:** organic farming, sustainability, competitiveness, management, yields

## THE INFLUENCE OF ORGANIZATIONAL CULTURE ON SUPPLY CHAIN INTEGRATION

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**Abstract:** A team of employees that strives for the realization of a common goal is what every company needs, and the success of business depends on the way of functioning and thinking of that team. The organizational culture shapes the way employees think, react and behave. The business practice of companies in the Republic of Serbia has shown that the organizational culture oriented to employees, action and challenges is an important determinant of improving all business performance indicators, including the supply chain integration, which is the main topic of analysis within this paper. The dimensions of organizational culture affect internal integration, integration with customers and integration with suppliers, determining the generation of the key goal of supply chain management which refers to the delivery of the right product, at the right place, at the right time and at reasonable costs.

**Keywords:** organizational culture, supply chain integration, Republic of Serbia

## **PREDICTION OF THE COPPER PRODUCTION IN THE FRAMEWORK OF ELECTRICAL ENERGY CONSUMPTION USING ARTIFICIAL NEURAL NETWORK**

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**Abstract:** The metallurgical process of the copper production is a very complex process and requires the consumption of electrical energy in large quantities. One of the challenges of today is to reduce the use of electrical energy by increasing the energy efficiency of the system. This challenge can be solved by developing energy management in mining companies. In order to approach the development of energy management, it is necessary to create models for predicting the volume of copper production by investigating electricity consumption in the main production stages. In this paper, the consumption of electricity required in the process of copper production is analyzed on the example of a local mining company. Data on electricity consumption were collected for a period longer than one year and the parameters were divided according to the main phases of the metallurgical process. Two models for predicting copper production using artificial neural network were created and the most influential parameters were identified. The significance of the models is reflected in the efficient forecasting of the copper production and therefore the demand for electrical energy. Another advantage of the models is the increased possibility for rationalization of electricity consumption on the basis of the influential parameters. The models are recognized as flexible and can find their application in related companies.

**Keywords:** Electricity consumption, copper production, prediction model, artificial neural network

## **IS THE WORLD HEADING TOWARDS DE-GLOBALIZATION DUE TO UNCERTAIN CONDITIONS**

**Malay Ghosh**

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**Abstract:** Globalization, Glocalization, Regionalization, Localization with Global approach, Hyper Localization and De-globalization are the buzz word for the present Global Economics . The world is going through metamorphic challenges due to international conflicting interest and national sovereignty changes in geo economic, military, political, diplomatic spectrum and demographic variations. Changes which not only transforming the world dynamics but have also affected the fate of countries relying on Globalization or Localization approach.

Thomas Friedman once stated “The world is flat”. Localization, Colonization, Regionalization, or Globalisation are the international phenomena which cannot be stopped at will or desisted. Globalisation has gone through different flavours. Globalization started as a compulsion of west ; De-Globalization is also being taken as compulsion of west, There are different phases of Globalization , The advent of new world order and emergence of American dominance after the end of world war, America emerged as Super power, created blocks, cartels to fulfill American Interest. During the height of American Diplomacy and Russian approach of Controlled Structure, it tried to create a new world order through blocks and military alliances.

The world economy is affected by the process of De- Globalisation, which exhibited in three phases. The first phase initiated with Trade Protectionism. The second with increased global convergence and third associated again with de-convergence or trade dominance through Protecting measures directing towards national sovereignty.

**Keywords:** De-globalization, Localisation, Regionalisation, Colonisation, Glocalisation

## **HUMAN CAPITA OF FEMALE ENTREPRENEURS IN DIFFERENT LIFE-SPANS**

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**Abstract:** This paper analyses the differences within women entrepreneurs in different life spans with the emphasis on human capital. The online questionnaire was designed using the 1KA on-line platform and was sent to Slovenian female entrepreneurs who were accessed via email addresses provided to the publicly accessed database. 10.000 emails were sent out with an invitation to participate in the study and 340 responded adequately to the questionnaire which makes the final numerus of the sample. The chi square statistics, analysis of variance and multivariate discriminant analysis were used to test the hypotheses which were confirmed or rejected at the statistical risk level of 5% ( $p \leq 0.05$ ). Female entrepreneurs at different life spans have different previous entrepreneurial and managerial experiences and they differently assess the degree of influence of parents, friends and acquaintances on their entrepreneurial path. This research has implications for government or other business development agencies seeking to understand the patterns and problems of women entrepreneurs in Slovenia and provide a good basis for the preparation of programs and measures to promote the female entrepreneurship. It is proposed that female entrepreneurs at different stages of life need different incentives and support. There are few studies in Slovenia that have focussed on women entrepreneurs.

**Keywords:** female entrepreneurship, women entrepreneurs, entrepreneurship, social capital, human capital, life spans, the influence of motherhood, parental influence, work-life balance

## **PERSPECTIVES ON MULTICRITERIA CLASSIFICATION METHODS**

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**Abstract:** Various methods and algorithms have been developed in order to address multicriteria classification issues. In last two decades, in the field of the multicriteria decision making (MCMD) considerable attention has been paid to supervised classification problems, so called multicriteria sorting problems. However, recently some novel approaches have been proposed also for non-supervised classifications, known as multicriteria clustering procedures. Therefore, this paper aims to introduce some of the prominent multicriteria sorting and clustering methods. Illustrative examples have been employed to enlighten properties of the used MCDM methods. Moreover, this study discusses the similarities between obtained results of each methodology and evaluates their validity and robustness.

**Keywords:** Multicriteria decision making (MCMD), Multicriteria classification, sorting techniques, clustering

## **IDENTIFYING FACTORS THAT STIMULATE SUPPLIER-DRIVEN INNOVATIONS IN BUSINESS NETWORKS**

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**Abstract:** In the literature considerable attention has been given on the effects of supplier involvement in buyer innovation. Various researchers and practitioners have confirmed that intensive integration of suppliers in the process of the value creation positively influences the success of the buyers' organization. Hence, this study investigates the importance of some supplier's characteristics that can influence buyer-supplier innovative performance. For that purpose, measurement instrument was developed based on the literature analysis for this research topic. Proposed research model was tested by the Partial least squares (PLS) structural equation modelling (SEM), based on the survey of 347 respondents from the companies in Republic of Serbia. Collected data set represents the buyer's assessment of their present suppliers. The results of this paper highlights those factors, which can contribute that buying firms better utilize the innovative potential from their suppliers. In addition, the research findings show the importance of the indirect capabilities of buyer-supplier relationship, which can provide preferential status to buyer in order to obtain better resource allocation from suppliers' networks.

**Keywords:** Innovative supplier, Buyer-supplier relationship, SEM analysis, Supplier selection



## AVAILABILITY AND RELIABILITY OF MECATRONIC SYSTEMS OF MOTOR VEHICLES

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**Abstract:** The multitude of high performance equipment, as well as modern technologies integrated in the structure of vehicles, have led to an important change in their area of viability. These changes also have effects on maintenance work. Due to sensitivity of the electronic equipment to environmental, temperature and working conditions, it is necessary to adopt effective solutions to protect them and maintain their state of operation. The major challenge among classic vehicles, but also hybrid or electric is the thermal management of this equipments. IoT is a strategic concept for the future of communications between the various functional systems of society, which will adapt and regulate vehicle traffic in relation to the environment. IoT technology will generate certain job opportunities for predictive vehicle maintenance. The research is a subjective, well-documented analysis, based on which some appropriate measures are proposed for the future, regarding the maintenance process of vehicles. In this direction, the preventive nature of actions and the implementation of 5G / 6G technologies at a global level are pursued. Also, the implementation of hardware and software solutions in the structure of vehicles is considered. They aim to adapt the operation of vehicles to the optimal parameters, by applying preventive corrections.

**Keywords:** motor vehicle, reability, availability maintenance

## **THE PLACE OF PUBLIC RELATIONS IN THE CONTEMPORARY COMMUNICATION ENVIRONMENT**

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**Abstract:** The goal of every public relations action is to create a positive perception of a certain person or organization in their environment. Through constant and consistent dialogue with the community in which a certain company operates, its reputation is built in the long term. Therefore, in modern business circumstances, it is necessary to know the PR market. Quality relationships with traditional media are important, as well as familiarity with the latest technologies and the development of media for the placement of information. In this regard, special emphasis is placed on the Internet, social networks, blogs, etc. It is also important to respect the principles of corporate social responsibility, as it is significant concept of recent times. In addition, defining a strategy, ie defining a global plan on the possibilities and ways to achieve a certain goal, is an essential element of the PR process. The most demanding part of the planning process is the creation of the strategy, because the overall success in this area depends on the adequacy of the set strategy. Public relations experts can choose between three types of strategies, namely: proactive, reactive and combined strategy, and what also can be found is differentiation between "push strategy" and "attraction strategy".

**Keywords:** public relations, communication environment, contemporary business, promotion

## **THE ENTERPRISE SIZE AND AGE AS DETERMINANTS OF SMEs FAILURE**

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**Abstract:** This paper presents an analysis of the failure determinants of small and medium enterprises in Serbia. The aim is to examine the relationship between size and age, and the failure of small and medium-sized enterprises. The analysis was performed on data from a survey conducted in Serbia in small and medium-sized enterprises during 2018 and 2019, which had financial difficulties and at some point ceased or dramatically changed the business operations. Separate statistical analyzes were conducted for the size of small and medium enterprises and the factors of failure, and for the age of enterprises, in order to determine the categories that are more sensitive to financial distress than others. The results indicate that enterprises in Serbia are differently affected by the financial crisis when looking at the size of companies, while attitudes about certain factors of failure do not differ. Further, in the case of the age of the enterprise, the results show that younger enterprises are more prone to financial crises and bankruptcy than more mature enterprises.

**Keywords:** enterprise size, enterprise age, small and medium enterprises, failure

## **AIR TRANSPORT FACTOR FOR THE ECONOMIC AND SOCIAL DEVELOPMENT OF REGIONS**

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Bulgaria*

**Abstract:** The presented report is devoted to the development of air transport in the South-East region of the Republic of Bulgaria during the period 2008-2017. An attempt was made to establish the impact of air transport on the social and economic development of the region at NUTS-2 level. The analyses of socio-economic data and trends related to the development of regions use official statistics from the National Statistical Institute, Eurostat, ministries, state and regional agencies, state commissions, territorial and regional executive offices, as well as socio-economic data from analytical studies, infrastructure and environmental development of the regions and other official sources. This report argues that air transport in the country has potential growth and could to create more employment, higher GDP, and higher incomes.

**Keywords:** regional development, sustainable, integrated development of the region, socio-economic analysis, air transport

## **INCLUSION OF UNCERTAINTY WITH DIFFERENT TYPES OF FUZZY NUMBERS IN DEMATEL**

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Ljubljana, Biotechnical Faculty, Slovenia*

**Abstract:** Nowadays the multi-criteria decision making is very complicated due to uncertainty, vagueness, limited sources, knowledge and time. The Decision-making Trial and Evaluation Laboratory (DEMATEL) method is a widely used multi-criteria decision-making method to analyze the structure of a complex system. It is useful in analysing the cause and effect relationships between the components of the system. Fuzzy sets can be used to include uncertainty in multi-criteria decision making. Linguistic assessments of decision makers can be translated into fuzzy numbers. In this study, fuzzy numbers, intuitionistic fuzzy numbers and neutrosophic fuzzy numbers were used for the decision makers evaluations in the DEMATEL method. The aim of this study was to evaluate how different types of fuzzy numbers affect the final results. An application of risk in construction projects was selected from the literature, where seven experts used a linguistic scale to evaluate different criteria. The results showed that there are only slight differences between the weights of the criteria with regard to the type of fuzzy numbers.

**Keywords:** DEMATEL, fuzzy sets, intuitionistic fuzzy sets, neutrosophic fuzzy sets

## **COVID-19 AND TOURISM INDUSTRY IN ASEAN**

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**Abstract:** With Covid-19, we are already seeing early signs of a shift in how consumers and businesses are affected. The complexity and the pressure to cope with the pandemic impose tremendous challenges for many across the world, economic sectors, and societies in ASEAN countries. The purpose of this paper is to examine to what extent tourism industry is affected by COVID-19 as well as how domestic and regional cooperation will help to revive the tourism industry. The research questions will include: (1) To what extent has the outbreak of COVID 19 affected the tourism industry in ASEAN? (2) What are the immediate responses of tourism enterprises to sustain their survival? (3) What are the fiscal responses and strategies introduced by the governments to mitigate the impact of COVID-19 on tourism industry in ASEAN?

**Keywords:** COVID-19, tourism industry

## HELMINTH FAUNA OF *BARBUS CYCLOLEPIS* HECKEL, 1837 AND ECOLOGICAL APPRAISAL FOR THE CONDITION OF THE CHEPELARSKA RIVER, BULGARIA

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**Abstract:** Ecological monitoring was performed on Chepelarska River using *Barbus cyclolepis* Heckel, 1837, and its parasite communities as bioindicators. Helminth parasites are recorded in 45.83% of the examined specimens of the round-scaled barbell from the freshwater ecosystem of the Chepelarska River. Two species of parasites are fixed: one acanthocephalan species *Pomphorhynchus laevis* (Zoega in Müller, 1776), and one nematode species (*Rhabdochona hellichi* (Sramek, 1901). The analysis of the dominant structure of the found parasite species is presented to the component and infracommunities level. In the component community of *Barbus cyclolepis* from Chepelarska River *R. hellichi* is core parasite species (P%=37.5), and *P. laevis* is an accidental parasite species (P%=7.41). The determined basic ecological characteristics, biotic indices, and bioindicator significance of the established parasite species were discussed for ecological evaluation of the state of the studied freshwater ecosystem. The established in this study parasite species are considered and compared with previous researches of parasite communities of *Barbus cyclolepis* in Bulgaria. This is the first report of *Pomphorhynchus laevis* and *Rhabdochona hellichi* from Chepelarska River, Bulgaria.

**Keywords:** *Barbus cyclolepis*, *Rhabdochona hellichi*, *Pomphorhynchus laevis*, Chepelarska River, fish parasites, biomonitoring

## **ECOLOGICAL STUDIES OF EURASIAN MINNOW FOR EVALUATION OF THE CONDITION OF GLACIAL LAKE BEZBOG IN PIRIN MOUNTAIN, BULGARIA**

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University-Plovdiv, Bulgaria*

**Abstract:** The glacial lake Bezbog fall within the boundaries of Pirin National Park and Pirin Protected Area BG0000209. The Park is of particular importance for the protection of the glacial lakes and the upper reaches of the rivers as typical habitats for the ichthyofauna. The fish species integrate the effects of stressors manifested at lower trophic levels, making them an extremely important biological element in understanding the impacts of large-scale environmental changes. The analysis of the parasite populations and communities of fish reflects their conditions and relationships with other organisms in the investigated lake ecosystem. During the ecological study of 30 specimens of Eurasian minnow (*Phoxinus phoxinus* (Linnaeus, 1758)) by applying standard techniques for parasites, an infestation with the nematode species *Salmonema ephemeridarum* ((Linstow, 1872) Moravec, Santos & Brasil-Sato, 2008), the larva was found. This is the first study of the helminth fauna of Eurasian minnow from Bezbog Lake. This study aims to present basic ecological characteristics of populations and communities of Eurasian minnow and the bioindicator significance of the established parasite species for ecological evaluation of the state of the studied freshwater ecosystem.

**Keywords:** *Phoxinus phoxinus*, *Salmonema ephemeridarum*, glacial lake, Bezbog, Pirin National Park



## HELMINTH FAUNA OF SOME CYPRINID FISH SPECIES FROM LOWER STREAM OF RIVER TUNDZHA, BULGARIA

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University-Plovdiv, Bulgaria*

**Abstract:** During the ecological study are examined 34 cyprinid fish specimens (bleak (*Alburnus alburnus*), asp (*Leuciscus aspius*), rudd (*Scardinius erythrophthalmus*) and Vardar nase (*Chondrostoma vardarense*)) from River Tundzha. The fish hosts are examined by applying standard techniques for parasites. Four species of parasites are fixed: two acanthocephalan species (*Acanthocephalus anguillae* (Müller, 1780), *Acanthocephalus tenuirostris* (Achmerov & Dombrowskaja-Achmerov, 1941)) and two nematode species (*Rhabdochona denudata* (Dujardin, 1845), *Philometra cyprinirutili* (Creplin, 1825)). All established parasite species are autogenic, matured in fish. This is the first study of helminth fauna of asp from River Tundzha. Bioindicator significance of established parasite species was discussed for ecological evaluation of the state of the studied freshwater ecosystem. As a result of this study, new data for helminths and helminth communities of cyprinid fish species is presented. This is the first report of *Acanthocephalus tenuirostris* and *Philometra cyprinirutili* that are component parasite species for the helminth communities of asp from Tundzha River, Bulgaria.

**Keywords:** *Alburnus alburnus*, *Leuciscus aspius*, *Scardinius erythrophthalmus*, *Chondrostoma vardarense*, fish parasites, River Tundzha

## **ASSESSMENT OF THE IMPACT OF THE EUROPEAN UNION'S ENERGY EFFICIENCY POLICY IN IMPROVING THE COMPETITIVENESS AND ECONOMIC EFFICIENCY OF INDUSTRY-SPECIFIC ENERGY SAVING PROGRAMS**

**Natalya Safronova, Aleksey Budakov**

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**Abstract:** It is generally accepted that the country's energy supply is of paramount importance at the level of national energy planning. In this regard, policies are being developed that allow governments to exercise some control over overall consumption without negative consequences for both industry and trade in the country. Countries that had favored oil over other fuels because of their competitive prices and ease of use were suddenly faced with high inflation and large deficits in their balance of payments, a direct consequence of the 1973 energy crisis. In order to overcome these imbalances and their economic vulnerability to fluctuations in the oil supply market, governments have made strenuous efforts to develop, as might be expected, effective energy policies without compromising the existing strategy for growth in industry and trade. Indeed, the legacy of the "oil embargo" has made major industries in developed countries more respectful of the real importance of energy resources in their operations. For example, the logging industry, for its part, previously favored the role of energy in its operations in General, now sees it as an area where potential savings can be achieved, thereby significantly reducing production costs. However, while the current oil glut has eased tensions in most energy-saving investment projects, both governments and industry and trade around the world appear to be closely monitoring developments in the petroleum market. The upward trend in energy prices is inevitable, although to what extent it is difficult to predict, and also impossible to foresee such events, like civil unrest, local wars, or failures in diplomatic relations, to avoid a sharp increase in oil prices, as occurred in 1973/74, and to give governments the time necessary to create buffer reserves and implement effective energy conservation measures.

**Keywords:** institutional aspects of energy saving, energy efficiency, energy saving

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