



**Fourth International Scientific Conference
on Recent Advances in Information Technology,
Tourism, Economics, Management and Agriculture**

ITEMA 2020

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BOOK OF ABSTRACTS



Association of Economists
and Managers of the Balkans
UdEkoM Balkan

**FOURTH INTERNATIONAL SCIENTIFIC CONFERENCE
ITEMA 2020**

*Recent Advances in Information Technology, Tourism,
Economics, Management and Agriculture*

BOOK OF ABSTRACTS

**Online-Virtual
October 8, 2020**

Fourth International Scientific Conference ITEMA

Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture

ISSN 2683-5991

Book of Abstracts (part of ITEMA conference collection)

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Published by:

Association of Economists and Managers of the Balkans,

Ustanicka 179/2 St. 11000 Belgrade, Serbia

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+381 62 8125 779

Printed by: SKRIPTA International, Belgrade

Cover image by: Gerd Altmann from Pixabay

Belgrade, 2020

ISBN 978-86-80194-38-7

ISSN 2683-5991

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CIP - Katalogizacija u publikaciji
Narodna biblioteka Srbije, Beograd

330(048)
004(048)
005(048)
338.48(048)
631(048)
616.98:578.834]:33(048)

INTERNATIONAL Scientific Conference ITEMA 2020 Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture (2020, 4)
Book of Abstracts / Fourth International Scientific Conference ITEMA 2020 Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture, October 8, 2020 Online-Virtual ; [organized by Association of Economists and Managers of the Balkans ; editor Vuk Bevanda]. - Belgrade : Association of Economists and Managers of the Balkans, 2021 (Belgrade : Skripta International). - ilustr., XVIII, 66 str. ; 25 cm. - (ITEMA conference collection, ISSN 2683-5991)

Tiraž 100. - Napomene i bibliografske reference uz tekst. - Bibliografija uz svaki rad. - Registri.

ISBN 978-86-80194-38-7

a) Informaciona tehnologija -- Apstrakti b) Ekonomija -- Apstrakti v) Menadžment -- Apstrakti g) Turizam -- Apstrakti d) Poljoprivreda -- Apstrakti d) Korona virus -- Ekonomski aspekt -- Apstrakti

COBISS.SR-ID 35883273

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PREFACE

Association of Economists and Managers of the Balkans headquartered in Belgrade – Serbia organized the Fourth International Scientific Conference on Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture - ITEMA 2020 online/virtually (due to the COVID-19 pandemic) on October 8, 2020 via Zoom platform.

The aim of the ITEMA 2020 conference was to bring together the academic community (experts, scientists, engineers, researchers, students and others) and publication of their papers with the purpose of popularization of science and their personal and collective affirmation. The unique program combined presentation of the latest scientific developments in Information Technologies, Tourism, Economics, Management and Agriculture, interactive discussions and other forms of interpersonal exchange of experiences.

Within publications from the ITEMA 2020 conference:

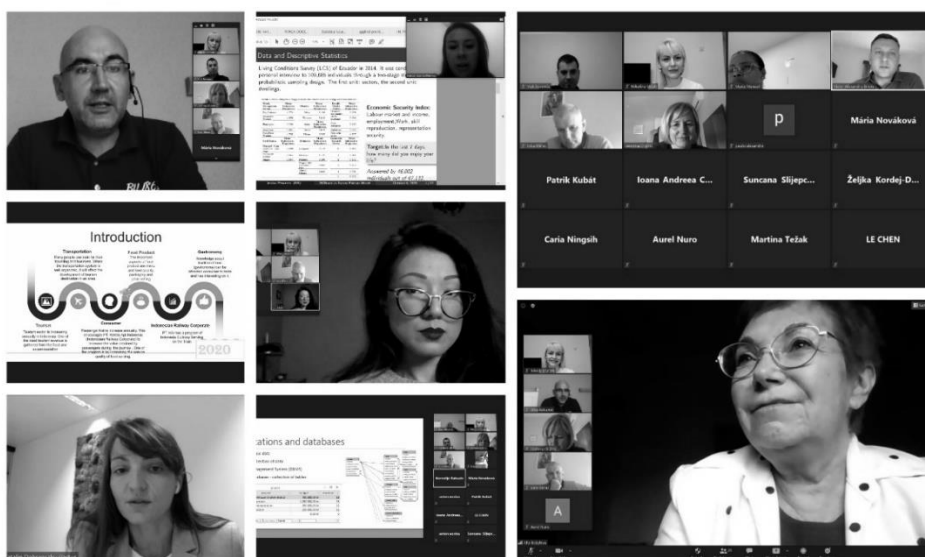
- 12 double peer-reviewed papers have been published in the ITEMA 2020 - Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture - **Selected Papers**,
- 34 double peer-reviewed papers have been published in the ITEMA 2020 - Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture – **Conference Proceedings**,
- 63 abstracts have been published in the ITEMA 2020 - Recent Advances in Information Technology, Tourism, Economics, Management and Agriculture - **Book of Abstracts**.

ITEMA 2020 publications have more than 500 pages. All papers have been scanned with the Crosscheck (powered by Turnitin) and have ORCID iD integration. Besides that, some papers have been accepted for publication in the conference partner journals namely:

1. **Balkans Journal of Emerging Trends in Social Sciences (Balkans JETSS)** is an international scientific journal, published by the Association of Economists and Managers of the Balkans. Aims and scope are economics, management, law and tourism. Balkans JETSS has the following indexations: Google Scholar, CEEOL (Central and Eastern European Online Library), Index Copernicus, ProQuest's Serial Solutions, Summon, Primo Central, Alma, EBSCO's EDS Discovery Service and Knowledge Base, TDNet and OCLC.
2. **Journal of Innovative Business and Management** is published by the DOBA Faculty, Maribor (Slovenia) and is referred in international scientific journal bases DOAJ, Google Scholar, EconPapers, ResearchGate and RePec. It has been published since 2009 and since then it has been attracting more and more interest among the readers, who predominantly come from academia and business practice.

3. **Journal of Sustainable Development (JSD)** is an international journal published by the Integrated Business Faculty – Skopje, North Macedonia. JSD area includes three pillars of economic, social and environmental development issues. All these aspects are considered relevant for publishing in the JSD. The journal is officially listed in the respected EBSCO database, CEEOL database, as well as the databases of Business Source Complete and Sustainability Reference Center. All articles published in the journal are also indexed in these databases.
4. **JFEAS** is published by the Çukurova University, Faculty of Economics and Administrative Sciences from Turkey twice a year as an open source. This international journal is dedicated to the wide scope of themes of economics, business, public finance, econometrics, international relations, labor economics and the theoretical, methodological and applications between these disciplines, and others in Turkish and English. The journal is indexed in DOAJ, DRJI and Index Copernicus.
5. **Central European Journal of Geography and Sustainable Development (CEJGSD)** starting with 2018 publishes relevant academic research papers in geography, sustainable development and other related areas. Journal has a reputable international editorial board comprising experts from Italy, Poland, Slovakia, Serbia, Bulgaria, Hungary, Romania, Israel, Russian Federation, and Turkey. CEJGSD has indexation in Ulrich's Periodicals Directory, ELSEVIER Social Science Research Network (SSRN) and Scientific Publishing & Information Online (SCPIO).

Participation in the conference took **114 researchers** with the paper representing **20 different countries** from different universities, eminent faculties, scientific institutes, colleges, and various ministries, local governments, public and private enterprises, multinational companies, associations, etc.



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EXPLORING SMART CITY RESEARCH FROM INFORMATION SYSTEMS AND MANAGEMENT PERSPECTIVES

Mario Jadrić¹ 

Abstract: *Research in the smart city domain is characterised by distinct multidisciplinary. The reason for this is the broadness of the domain, classified into six key categories: smart governance, smart people, smart living, smart mobility, smart economy, and smart environment, all focal points of research in separate scientific fields. Also, many researchers argue about the best approach and steps in the development of smart cities highlighting different technological, economic, or sociological aspects of research. This paper aims to explore and clarify the differences in smart city research from two different perspectives - information systems and management. Abstracts from almost 5.000 papers from the WoS database and more than 7.000 papers from the Scopus database were downloaded and analysed. Publications categorised into two perspectives were then analysed descriptively, including data about the number of papers, year of publication, and country of publishing. Furthermore, automated text mining procedure was performed for additional interpretation of attributes and occurrences from the two observed perspectives. The use of six smart city categories as keywords within each set was also analysed and visualised. The results indicate clear differences in both research approaches and research subjects between the two perspectives.*

Keywords: *Smart city, Information systems, Management, Text mining.*

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THE CASE FOR A COUPLED USER-ORIENTED PROCESS (RE)DESIGN AND INFORMATION SYSTEMS DEVELOPMENT

Maja Ćukušić¹ 

Abstract: *The paper synthesises studies of two specific conceptual models from a rather wide area of user-oriented process (re)design and the development of related, modern information systems based on smart technologies. Further, it proposes a new approach for coupling (1) a methodology for convergent customer experience management and business process management, with (2) a framework for user-oriented data-driven information systems development. It also analyses the implications and conditions for its implementation in private and public organisations.*

Keywords: *User-oriented, Process redesign, Data-driven development, Information systems.*

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A NEW APPROACH IN QUANTIFYING USER EXPERIENCE IN WEB-ORIENTED APPLICATIONS

Vasilije Vasiljević¹ 

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Abstract: *The primary goal of every developer is to develop the highest quality web application. The quality of the application is not only a subjective assessment of the developer, but objective and representative criteria for measuring performance must be defined. Google provides a model called Web Vitals with a subset of core Web Vitals that are important for quantifying user experience on the web. Some of the metrics are LCP (Largest Contentful Paint, refers to loading), FID (First Input Delay, refers to interactivity) and CLS (Cumulative Layout Shift, refers to visual stability). This paper will present modern technologies and tools for measuring the performance of websites and analyze them on a real example of a web application. The analysis will include the use and measurement of the most important parameters: Lighthouse, PageSpeed Insights, Chrome DevTools, Search Console, web.dev's measure tool, the Web Vitals Chrome extension and Chrome UX Report API.*

Keywords: *Web sites, Measuring, Performance, Web vitals.*

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COMPARATIVE ANALYSIS OF WEB APPLICATION PERFORMANCE IN CASE OF USING REST VERSUS GRAPHQL

Milena Vesić¹ 

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Abstract: *Web applications are the most common type of application in modern society since they can be accessed by a large number of users at any time from any device. The only condition for their use is an Internet connection. Most applications run using the HTTP protocol and client-server architecture. This architecture is based on the use of API (Application programming interface), most often REST architecture (Representational State Transfer). If there are several different functionalities on the website that fill their content with data from the web server, for most of them a special HTTP request must be generated with one of the existing methods (GET, POST, PUT, DELETE). This way of communication can be a big problem if the connection to the Internet is weak, there are a lot of HTTP requests because you have to wait for each request to be executed and for the web server to return the data.*




In this paper, one implementation of GraphQL is presented. GraphQL is an open-source data query and manipulation language for APIs. GraphQL enables faster application development and has less server code. The key advantage is the number of HTTP requests because all the desired data of the page is obtained with one request. This paper will show a comparative analysis on the example of a real website in the case of using the REST architecture and GraphQL in the case of different qualities of Internet connections, code complexity and the number of required requests.

Keywords: *Web page, GraphQL, REST, Performance.*

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USE OF “OWASP TOP 10” IN WEB APPLICATION SECURITY

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Abstract: *Web application security vulnerabilities can lead to various attacks on users, some of which can have major consequences. It is important to point out the weaknesses that allow abuse, because often increased risk awareness is the first step in protecting web applications. Some of the most critical security risks that organizations face today have been analyzed and uncovered using OWASP Top 10. This paper presents concrete examples of attacks and abuse of web applications. Through the implementation and analysis of attacks on web applications, weaknesses that need to be eliminated in order to protect against potential new attacks are identified. Specially, suggestions to help protect web applications from each type of attack listed and described are provided.*

Keywords: *Web security, Web attack, Weaknesses of the web application.*

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A FRAME OF REFERENCE FOR RESEARCH OF A BLOCKCHAIN-BASED SOLUTION TO CORPORATE GRC-MANAGEMENT

Le Chen¹ 

Abstract: *This society has faced many sorts of global challenges, especially the world of business and technological innovation, there's no greater aroused general argument nowadays than digital transformation (DT). Among production-oriented Corporates which many of them have begun to integrate digital technology into most areas of their business. How to well fulfil Corporate Governance, Risk and Compliance (GRC) while expanding existing businesses in the dramatic growth in DT environment has become a major challenge for all Corporates. Through a review of previous studying works and based on existing gaps the author evaluated whether there could be the feasibility of a blockchain-based technology being integrated as a solution to Corporate GRC-Management together with the theory of entire personnel's GRC responsibility system which would be parts of an agenda for the future research on this field and also contribute to Corporates in an overall strategic height level to embrace the coming of DT.*

Keywords: *Digital transformation, Corporate GRC-management, Software, Blockchain.*

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EVALUATING GREEN IT IN LOCAL ADMINISTRATION

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Abstract: *This work is prompted by the massive use of Information and Communication Technologies, the need for alignment with the business, the concern for integrated management and the need to protect natural resources and the environment. This article aims to present a framework, multidimensional and multidisciplinary, from the perspective of sustainability, in the treatment of Green IT, involving environmental issues and social responsibility, Governance of Information Technologies and Financial Management, in the context of Public Administration, more specifically in local administration. The methodology used is based on the literature review, in the field of thematic, and on a case study in development in local government, in order to analyze the feasibility and suitability with the validation of the framework. The main results obtained in the case study focus on the use of technology allied to Green IT, with theoretical reflexes for environmental quality and with possible cost reduction.*

Keywords: *Green IT, Information and communication technologies, Sustainability.*

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GRAPH DATABASE MANAGEMENT SYSTEMS AND GRAPH THEORY

Kornelije Rabuzin¹ 

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Abstract: *In recent years, graph databases have become far more important. They have been proven to be an excellent choice for storing and managing large amounts of interconnected data. Since graph databases (GDB) rely on a graph data model based on graph theory, this study examines whether currently available graph database management systems support the principles of graph theory, and, if so, to what extent. We also show how these systems differ in terms of implementation and languages, and we also discuss which graph database management systems are used today and why.*

Keywords: *Neo4j, MS SQL Server, Oracle, Cypher.*

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BRAVE NEW WORLD OF ZOOM IN REMOTE TEACHING/LEARNING**Igor Rižnar¹** 

Abstract: *During the dire times of the COVID-19 crisis, education institutions have been forced to adapt to the novel situation within an extremely short period. At many higher education institutions, face-to-face instruction was replaced by the brave new world of Zoom meetings, despite the fact that neither students nor professors were prepared for this seismic shift. Necessity may be the father of transformation – and transformation in higher education is needed – but it is also sensible to keep in mind that there is a huge difference between proper online education and remote education students have experienced during the last, say, ten months. This contribution focuses on the use of Zoom (and similar conferencing applications: MS Teams, Adobe Connect, etc), which has been widely adopted by education institutions. We argue that while Zoom might be suitable for synchronous discussions about less complex issues or planning future online tasks, it is less convenient for asynchronous e-learning/e-teaching activities, i.e. reflection on complex issues or the acquisition of complex cognitive skills (collaborative problem solving, experimentation, or, last but not least, integration of skills, knowledge, and attitudes of learners). Feeling of burnout, fogginess, and alienation due to extended periods of videoconferencing inevitably leads to concentration difficulties and prevents both students and teacher to think in a robust way, which, consequently, prevents meaningful communication even when we are not faced with pixelated or frozen video and the out-of-sync audio. In this contribution, we argue that Zoom sessions are a sorry substitute for face-2-face meetings and a far cry from what well-planned asynchronous e-learning or blended learning experience can/should offer.*

Keywords: *Blended learning, E-learning, Remote learning, Zoom, COVID-19*

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DIGITALIZATION OF EDUCATIONAL TOURISM ON INDONESIA TRADITIONAL GASTRONOMY TO TRAIN PASSENGERS

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Abstract: *People widely use trains as a means of transportation for business-related activities, tourism, etc. Many train passengers have testified to the outstanding facilities associated with trains, such as the food and beverages shared during the whole journey. Therefore, this study aims to determine the effects of product quality, Quick Response (QR) code scan packaging, and price on consumer interest for buying traditional gastronomy products on the train. The QR code is a digital system used in education tourism on Indonesia's traditional gastronomy. It contains product information, such as ingredients, philosophy, history of food, place of production, how to eat, etc. A multiple regression model was used to collect data from 300 respondents in three gastronomy categories, namely course, snack, and beverage. The result showed that product quality and prices of food, beverages, and snacks have a significant effect on consumers' purchase interest and packaging has an insignificant effect. However, packaging that includes a gastronomic tourism educational barcode can increase tourists' insight into the gastronomic value of the food, snacks, and drinks served. Therefore, it is essential to properly package these commodities by providing food and beverage services on the train. This research recommends the urgency of synergizing among the digital program of traditional gastronomy preservation with train catering and restaurants to formulate strategies for serving the traditional gastronomy product on the train.*




Keywords: *Tourism, Barcode, Digitalization of education, Traditional gastronomy, Train.*

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INITIAL THOUGHTS OF COVID-19 UNEXPECTED CONSEQUENCES FOR TOURISM

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Abstract: *This paper addresses some initial scientific points of view about the new topic regarding the Coronavirus influence known until now and the objective is to reveal some unexpected consequences of the virus for tourism. The research aims to present the impact that the virus had on travel blogs from Romania. Because the tourism sector has been and still is affected due to this virus we decided to analyse travel blogs from a comparative perspective, more precisely, the articles posted in 2019, in March-May, and those of this year. The novelty element that the paper brings is represented by the impact of the virus determined on the content generated by travel bloggers, and in Romanian research, there is a small number of such studies, focused on travel blogs.*

Keywords: *Travel, Tourism, Virus, Impact, Consequences, Opportunities, Blogs.*

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TRAVEL AND TOURISM AFTER COVID-19 – BUSINESS AS USUAL OR OPPORTUNITY TO RESET?

Ubaldo Comite¹ 

Abstract: *It has recently been claimed that the current generation will come to think of BC and AC as Before Corona and After Corona. This suggests how the world of travel and tourism will look like After Corona. We all know by now how things have turned out since 2020 January 1 of this year; tourism-dependent communities around the world have turned into communities in crisis. The tourism industry in the world has always worked under the assumption that things will be normal, and that tourists would continue to flock to tourist places, as long as there is growth in international travel. This is also the case for many other tourist destinations around the world including France, Croatia, Italy, Norway, Slovenia, to name a few countries that capitalize on this sector. A recent news article on COVID-19 effects suggests that tourism destinations will have to rethink their business as usual approaches going into the future. Communities around the world that are heavily dependant on tourism are particularly vulnerable as their livelihood is threatened in unprecedented ways. The COVID-19 has given the global tourism industry an opportunity to reset. The travel sector and tourism have the opportunity for turning their attention away from haphazard development to one that repositions itself as a major partner in contributing to sustainable and mindful travel. We cannot go back in time, but we can certainly learn lessons from past mistakes of prioritizing quantity over quality, and destruction over sensible development that can positively influence the quality of life and the environment for communities dependent on tourism. Tourism destinations have to rethink their destination appeal – should they aim to attract tourists of all kinds, or should they focus on specific types with a laser-like focus on quality tourists. Given the widespread and long-lasting impact of this pandemic, we must ask: will the global tourism industry heed the call for changing its course, doing away with the ill-practices Before Corona, or will the industry go back to its “business as usual” model After Corona? If the past offers any lessons (e.g. the 2008–09 recession), it is likely that the latter will be the case. There is a fundamental disconnect between what the United Nations World Tourism Organization (UNWTO) preaches (sustainability), and what it practices (growth expansion). This disconnect must be fixed first before we can consider the future of tourism. This work promotes reflection on the impact of the recent socioeconomic crisis resulting from the pandemic COVID-19, as well as on the strategies that, in such a context, can attenuate negative effects on travel and tourism.*

Keywords: *Travel, Tourism, COVID-19, Business, Socioeconomic crisis, Pandemic, Company.*

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SMALL AND MEDIUM - SIZED ENTERPRISES IN TOURISM AND THEIR IMPACT ON REGIONAL DEVELOPMENT

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Abstract: *A long-term problem of the Slovak economy is significant regional disparities caused by insufficient use of existing local resources. Inefficient and unsystematic use of existing resources at the local level causes a decrease in the competitiveness of these regions, which is also reflected in the overall performance of the economy. In our article, after the initial definition of basic terminology, we will focus on the evaluation of regional disparities and the current development of regional differences in the conditions of the Slovak Republic. We will evaluate the impact of SMEs on regional development in the Slovak Republic. However, we will focus primarily on their positive benefits to reducing regional disparities in the conditions of the Slovak Republic. We will pay particular attention to SMEs operating in the field of tourism in individual regions, how they contribute or in the future can solve the problem of reducing regional disparities.*

Keywords: *Regional disparities, Regional development, Small and medium enterprises, Tourism.*

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THE MARKETING MIX - A BASIC TOOL IN THE MANAGEMENT OF THE TOURIST DESTINATION

Delia Fratu¹ 

Abstract: *Kotler's 2002 definition of place marketing is as follows: "Place marketing means designing a site to meet the needs of its target markets. The development of places means the development for a place of a systematic long-term marketing strategy, directed towards the identification and development of the natural and potential attributes of an area".*

The elaboration of a marketing mix for the tourist destination is the main tool for marketing planning and for adopting the most appropriate strategies. Given that each tourist destination has its specificity, the marketing mix must contain its own elements, adapted to the objectives set.

In this paper we chose to exemplify a way to apply and combine the components of the following marketing mix: product, price, distribution, promotion, staff, partnerships, packaging, security, process management for the tourist destination Brasov Area.

Keywords: *Place marketing, Marketing mix, Tourism, Destination.*

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CREATING PERSONALIZED GUEST EXPERIENCE JOURNEY IN LEISURE HOTEL

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Abstract: *With advancements in technology, the use of Virtual Reality (VR) and Artificial Intelligence (AI) in the hospitality industry has become common. New technologies have changed the guests expectations and their journey. Therefore, the purpose of this paper is to provide a comprehensive conceptualization of the personalized guest experience journey in leisure hotel i.e. the way front-line employees creates personalized and pro-active guest experience that the intelligent use of data and technology support. The paper provides systematic literature review of VR and AI as support tool for front-line employees while creating personalized guest experience during each of the five stages of the guest cycle: pre-arrival, arrival, stay, departure, post-stay. This paper is theoretical, so empirical studies are necessary to validate or reject the proposed concept.*

Keywords: *Guest experience journey, Virtual reality, Artificial intelligence, Front-line employee.*

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**THE COMMUNICATION COMPETENCIES OF TOUR GUIDES FOR
SUCCESSFUL SERVICE DELIVERY (CASE STUDY OF THE TOURISTS'
PERCEPTIONS AND LEVEL OF SATISFACTION THROUGH THE
SCOPE OF THE TOUR GUIDING SERVICE IN NORTH MACEDONIA)**

Kliment Naumov¹

Abstract: *Tourism is a multifunctional industry, therefore, involves many different stakeholders for its operational activities. An essential element for sustainable tourism development in any tourist destination is the participation of active stakeholders and their collaborations. Among them, the tourist guides play a major role in the tourism industry since tourists need to have a clear picture of the country and its offerings, laws, rules, and regulations, and other expected behavioral patterns. Successful tour guides have the ability of functional storytelling and a high level of interpretative skills, with a special focus on the knowledge of selective approach when informing the clients. The knowledge of foreign languages and their fluency is the condition sine qua non in the field of tour guiding. Moreover, guides should have the ability to transform the tourist visit into an unforgettable experience. In addition to the quality and ability of tourist guides, there are many problems and issues connected to the linguistic and communicative perspective that can impact the ultimate satisfaction of tourists. The basic topic of this paper is the language fluency and communication skills in the process of interpretation of tour guides, elaborated from the tourist point of view.*

Keywords: *Tourist experience, Tourist guides, Tour guiding, Languages, Interpretation, Communication competencies, Empirical research.*

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LIVING ON CROATIAN ISLANDS – PERCEPTIONS AND REALITIES OF ISLAND DEVELOPMENT POLICY

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Abstract: *The Croatian islands make the second-largest archipelago in the Mediterranean. There are 1244 islands (78 islands, 524 islets, and 642 rocks and rocks awash) that are situated in a range of 450 km along the eastern coast of the Adriatic Sea. The total area covers 3300 km² (about 5.8 % of Croatian mainland territory) and the length of their coast is 4057 km. Twenty of these islands occupy an area larger than 20 km² each, and the other 58 ones have a surface from 1 km² to 20 km². There are 47 islands that are permanently inhabited. Administratively, islands belong to seven coastal counties and 51 island towns/municipalities. Several small islands are in the jurisdiction of seven coastal cities.*

By the Constitution, islands are considered as a region of special protection and unique value. Islands specificities require development policy that takes account of demographic, economic, environmental, and other island issues. In the situation of the COVID-19 pandemic, island development policy becomes even more challenging and complex.

This paper aims to analyse the attitudes and perceptions of the islanders about the living conditions on the island and the impact of public policies on island development. Identifying the problems from the local perspective helps us to evaluate the success of island development policy. Effective island policy increases the quality of life of the islanders while respecting island specifics. For this purpose, the results of a survey conducted on a sample of the inhabitants of Croatian islands conducted in 2020 are used. The surveys were conducted using the online tool LimeSurvey. The results indicate that 42 percent of the islanders think that living conditions on the islands are not improving. Most of the islanders think that government policy does not encourage island development. The paper also identifies factors that are responsible for differences in attitudes and perceptions of islanders.

Keywords: *Islands, Living conditions, Development policy.*

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KEEP THE PACE: THE UNCORKED POTENTIAL OF WINE TOURISM IN ŠUMADIJA

Patrik Kubát¹ 

Abstract: *In the last two decades, Serbia has begun to re-establish itself within other wine-producing countries. One of the Serbian wine regions - Šumadija - caught hold of this opportunity and launched into the wine tourism industry. This paper, based on visits to Šumadija wineries and interviews with winemakers, is a survey of the present tourism infrastructures and wine histories. The aim is to explore the capacity of the wine industry in its attempt to develop tourism as a component of regional developmental progress. It is a review of the wine tourism situation and development in the Šumadija region, a survey of where it is today, and an assessment of its potential in the future. The author conducted interviews with winemakers and collected primary data from tourists at the regional wine event in 2017. In conclusion, recommendations are made for the further development of the area as a wine destination.*

Keywords: *Enotourism, Serbia, Tourism development, Wine region.*

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THE IMPORTANCE OF ACQUIRING INTERCULTURAL COMMUNICATIVE COMPETENCE FOR PRESENT AND FUTURE TOURIST PROFESSIONALS IN MONTENEGRO

Gordana Mušura¹ 

Abstract: *The aim of this paper² is to discuss and emphasize the importance of acquiring and developing intercultural communicative competence (hereinafter ICC) for tourist professionals in the context of strategic advantages of Montenegro as a tourist destination. Montenegro, as a multicultural, multiethnic and multi-confessional country with a very rich and ancient cultural heritage and preserved natural resources, strives for European integration and achieving international competitiveness in the field of tourism through the development of its strategic advantages. In order to achieve progress in tourism industry, it is necessary to apply an interdisciplinary approach, which includes a symbiosis of elements of culture and tradition with the need and demands of modern tourists who want to communicate with the domicile population, or at least with their hosts, as well as to feel comfortable and welcome at the destination they have chosen for their holiday. Therefore, communicative and affective segments must be added to this interdisciplinary approach which inevitably includes the acquisition of new skills in intercultural communication at the international level. Such communication enables the development of ICC through the inclusion of both linguistic and cultural elements of education in tourism and applying the intercultural approach in foreign language teaching. Furthermore, developing intercultural aspects in tourism should be seen as one of core advantages of smaller and still insufficiently affirmed tourist regions, such as Montenegro, especially in these disruptive circumstances of crisis caused by Covid -19 virus.*

Keywords: *Intercultural Communication, Globalization, Intercultural approach in foreign language teaching, Intercultural speaker, Intercultural awareness and sensitivity, Long-life learning*

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² Some segments of the paper were taken, adapted and translated into English from the doctoral dissertation “Sticanje interkulturene komunikativne kompetencije u nastavi italijanskog jezika kao stranog u osnovnoj školi” (Mušura, 2019). (“Acquiring intercultural communicative competence in teaching and learning Italian as a foreign language at elementary school”)

THE IMPACT OF SECURITY CHALLENGES ON TOURISM DEVELOPMENT

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Miloš Krstić³ 

Abstract: *Terrorist acts are more and more prevalent nowadays. Events that threaten the safety, lives and health of people are becoming more and more present on a global level. Exclusive summer resorts and attractive terrorist destinations were the targets of terrorist attacks. In what way and how such negative phenomena affect tourism at the international level?, whether security risks have a disincentive effect on tourism and tourist activity?, and how much people are really afraid of terrorism?, are some of the issues addressed in this paper. Also, from the point of view of raising the quality of tourist offers and services, important issues are the issue of building a security control system and the assessment of security risks and protection from them.*

Keywords: *Terrorism, Tourism, Protective measures, Consequences.*

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ECONOMIC BENEFITS OF ŠUMAVA NATIONAL PARK

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Abstract: *The main task of nature protection is to preserve or improve the current state of nature. Thus, it might seem that the economic benefits of the national park are not important for the management of the protected area, but calculating the economic benefits of protected areas for the region improves its acceptance among locals and visitors, as well as political and economic actors.*

From 2017 to 2019, Šumava National Park (Bohemian Forest National Park) in the Czech Republic and Nationalpark Bayerischer Wald (Bavarian Forest National Park) were subjected to extensive socio-economic monitoring, which included, among other things, research focusing on the economic benefits that visitors brought to both national parks. This article presents the results of research of the regional economic benefits that visitors brought to Šumava National Park compared with those in Bavarian Forest National Park, although the methods and findings were not absolutely identical and therefore difficult to compare.

Keywords: *Šumava national park, Economic benefits, Acceptance.*

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THE ROLE OF INTERNATIONAL AND PROFESSIONAL ORGANISATIONS' IN DEFINING STATE-OWNED ENTERPRISES

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Ioana Natalia Beleiu² 

Abstract: *State-owned enterprises (SOEs) have an essential role in national economies worldwide, but regardless of their acknowledged contribution to the global markets, divergent opinions and approaches can be observed when defining and characterizing these entities. On the other hand, international organizations such as OECD, International Monetary Fund, European Commission, United Nations, World Trade Organizations, World Bank, Asian Development Bank, and professional organizations such as IPSASB and Chartered Institute of Management Accountants have an essential role in SOEs' activity. One of the biggest challenges that professional bodies have nowadays is to find a unique definition to match the need of practitioners and capture the complexity of SOEs. Even if there can be identified some common approaches between academicians, international, and professional organizations, there are some delicate areas that require substantial efforts for clarifications. The paper addresses this topic, aiming to clarify the main aspects concerning the definition of SOEs from international and professional organizations' point of view based on qualitative research methods.*

Keywords: *State-owned Enterprises, International and professional organisations, Governance.*

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TESTING THE EMPIRICS OF WEAK FORM OF EFFICIENT MARKET HYPOTHESIS: EVIDENCE FROM LAC REGION MARKETS

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Paula Heliodoro³ 

Paulo Alexandre⁴ 

Abstract: *The new coronavirus disease (Covid-19) evolved quickly from a regional health outbreak to a global collapse, stopping the global economy in a unprecedented way, creating uncertainty and chaos in the financial markets. Based on these events, it is intended in this paper to test the persistence of profitability in the financial markets of Argentina, Brazil, Chile, Colombia, Peru and Mexico, in the period between January 2018 to July 2020. In order to perform this analysis where undertaken different approaches in order to analyze if: (i) the financial markets of Latin America are efficient in their weak-form during the global pandemic (Covid-19)? ii) If so, the persistent long memories cause risks between these regional markets? The results suggest that the returns don't follow the i.i.d. hypothesis, from dimension 2, reinforcing the idea that returns of stock indexes have a non-linear nature or a significant non-linear component, exception made to the Argentina market, what was expected in virtue of the Ljung-Box (with the return squares) test results, and ARCH-LM. Corroborating the exponents Detrended Fluctuation Analysis (DFA), indicate the presence of persistent long memories, namely into the following markets: Colombia (0.72), Chile (0.66), Brazil (0.58) and Peru (0.57). The Argentina market does not reject the random walk hypothesis, while the Mexican market suggests some anti-persistence (0.41). This situation has implications for investors, once that some returns can be expected, creating arbitrage opportunities and abnormal income, contrary to the supposed from the random walk hypothesis and information efficiency. The t-test results of the heteroscedasticity form the two samples suggest that there is no risk transmission between these regional markets, with the exception to the BOVESPA / BOLSAA MX markets, that is, the existence of persistent long memories in the returns does not imply the risk transmission between markets. These finds allow the creation of strategies of diversification inefficient portfolios. These conclusions also open space for the market regulators implement measures that guarantee better informational information of these regional markets.*

Keywords: Covid-19, LAC region; Long memories, Arbitration.

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THE IMPACT OF THE COVID-19 ON THE FINANCIAL MARKETS: EVIDENCE FROM G7

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Maria Manuel⁴ 

Abstract: *This essay aims to analyse the impact of the 2020 global pandemic on the stock indexes of France (CAC 40), Germany (DAX 30), USA (DOW JONES), United Kingdom (FTSE 100), Italy (FTSE MID), Japan (Nikkei 225) and Canada (TSX 300), from January 2018 to June 2020, with the sample being divided into two sub periods: first sub period from January 2018 to August 2019 (Pre-Covid); second period from September 2019 to June 2020 (Covid-19). In order to carry out this analysis, different approaches were taken in order to analyse whether: (i) the global pandemic (Covid-19) increased the persistence of the G7 financial markets? In the Pre-Covid period, we can verify the presence of long memories in the Canadian market (TSX), while the markets in France (CAC 40) and Italy (FTSE MID) show signs of balance, since the random walk hypothesis was not rejected. The German (DAX 30), USA (DJI), United Kingdom (FTSE 100) and Japan (NIKKEI 225) markets have anti-persistence ($0 < \alpha < 0.5$). In period II, the Covid-19-time scale is contained, and we verified the presence of significant long memories, except for the US stock index (0.49). These findings make it possible to show that the assumption of the market efficiency hypothesis may be called into question, because these markets are predictable, which validate the research question. The results of the pDCCA correlation coefficients, in the Pre-Covid period, show 14 pairs of median markets ($0.333 \rightarrow \cong 0.666$). We can also see 7 pairs of markets with strong correlation coefficients ($0.666 \rightarrow \cong 1,000$), showing that these markets have a tendency towards integration, this evidence may call into question the hypothesis of portfolio diversification. In period II (Covid-19) the λ DCCA correlation coefficients have 7 strong market pairs ($0.666 \rightarrow \cong 1,000$), 5 pairs have weak pDCCA coefficient ($0.000 \rightarrow \cong 0.333$), 5 market pairs show anti-correlation ($-1.000 \rightarrow \cong 0.000$), and 4 market pairs show median coefficients (pDCCA) ($0.333 \rightarrow \cong 0.666$) (out of 21 possible). When compared to the previous subperiod, we found that the majority of the pDCCAs decreased, which shows that the markets have decreased their integration, making it possible to diversify portfolios in certain markets, especially in the Japan market (NIKKEI 225). These conclusions open space for market regulators to take measures to ensure better*

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informational information, in the stock markets, in the 7 most advanced economies in the world.

Keywords: *Covid-19, G7, Persistence; Long memories, Arbitration.*

RANDOM STRATEGY VERSUS TECHNICAL ANALYSIS STRATEGY IN THE US MARKET

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Abstract: *Random strategy is currently an interesting alternative to traditional trading of financial instruments. The paper builds on existing research into the trading of investment instruments through random strategy and strategies based on technical analysis. The highly liquid USD/CAD currency pair was chosen for the US market research. We analyze five years of data, and in every intraday trading session, only a single position will be opened. Technical analysis strategy uses essential indicators such as Bollinger Bands, relative strength index (RSI), moving averages (MA) and other. Every trading position will have the risk-reward ratio (RRR) 3 to 1. In addition, another trading positions on the USD/CAD currency pair will be opened without technical analysis. The time of entry into position will be indicated randomly with a similar risk-reward ratio (RRR) 3 to 1. The aim of this paper is to assess which of the above strategies is more suitable for the investor. In other words, this paper aims to compare the strategy of technical analysis and the random strategy in intraday trading concerning the profitability of these trades. We expect that a random strategy will be more suitable for the investor in many points.*

Keywords: *Investment decisions, Foreign exchange markets, Moving average, Backtesting, US market, Relative strength index.*

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THE DOW JONES INDUSTRIAL AVERAGE (DJIA) STOCK MARKET INDEX AND THE CHAOTIC GROWTH MODEL

Vesna Jablanovic¹ 

Abstract: *The Dow Jones Industrial Average (DJIA) index includes the stocks of 30 of the largest companies in the United States. It represents about a quarter of the value of the entire U.S. stock market. The changes in the DJIA index are often considered to be representative of the entire stock market. The basic aims of this paper are: firstly, to create the simple chaotic the DJIA stock market index growth model that is capable of generating stable equilibria, cycles, or chaos; secondly, to analyze the local stability of the DJIA index movements in the period 1982-2009; and thirdly, to discover the equilibrium level of the DJIA index in the observed period. This paper confirms the existence of the stable convergent fluctuations of the DJIA index in the observed period. Also, the golden ratio can be used to define the equilibrium level of the DJIA index in the presented chaotic model.*

Keywords: *DJIA index, Stability, Elliot waves, Chaos.*

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EVIDENCE OF INTRADAY MULTIFRACTALITY IN BRIC STOCK MARKETS: AN ECONOPHYSICS APPROACH

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Maria Manuel⁴ 

Abstract: *The pandemic outbreak (Covid-19) has affected the global economy, and the impact on financial markets seems inevitable. In view of these events, this essay intends to analyse the efficiency, in its weak form, in the BRIC markets, namely the stock indexes of Brazil (BRAZIL IBOVESPA), China (Shanghai Stock Exchange), India (S&P BSE SENSEX), Russia (MOEX Russia). The data are intraday (1 hour), from May 2019 to May 2020; to obtain more robust results, we divided the sample into time scales up to 5 days (Period I), and above 10 days (Period II), in a complementary way, and we use the opening and closing prices to estimate the adjustment time of each market. The results indicate that the BRIC markets have significant persistence (over 10 days), which may jeopardize market efficiency, in its weak form. On the other hand, the low initial correlation in certain stock indexes may create some arbitrage opportunities. However, our study did not analyse anomalous returns in these financial markets. These conclusions also open space for market regulators to take measures to ensure better information between these markets and international ones.*

Keywords: *COVID-19, BRIC, Long memories, Arbitration.*

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**SAFE HAVEN, HEDGE AND DIVERSIFICATION FOR STOCK
MARKETS: GOLD VERSUS SILVER****Ana Farinha¹** **Rui Dias²** **Paula Heliodoro³** **Paulo Alexandre⁴** 

Abstract: *This paper aims to analyse if whether Gold (Gold Bullion: Zurich) and Silver (Silver Paris Spot E/KG) will be a safe haven for portfolio diversification in the financial markets of Germany (DAX 30), USA (DOW JONES), France (CAC 40), Italy (FTSE MID), United Kingdom (FTSE 100), Hong Kong (Hang Seng), China (SHANGHAI SE ASHARE), Japan (NIKKEI 225), in the period between 1 January 2019 to 2 September 2020. In order to perform this analysis where undertaken different approaches to analyse if: (i) the gold and silver market will be a safe haven when financial markets break down? (ii) If so, can market shocks question portfolio diversification? The results suggest 53 pairs of integrated markets (out of 90 possible). Gold and Silver have integrations with each other and with the USA, but the other financial markets integrate with Gold and Silver, namely the US, France, UK, Italy and Hong Kong markets (the latter only with Silver). The China market has a single integration but is integrated by the USA, France, the United Kingdom, Italy, and Germany, which partially rejects the first investigation question. In corroboration, causality tests show 67 causal relationships (out of 90 possible). The Markets of Italy (FTSE MID), the USA (DOW JONES) cause, in the Grangerian sense, all its peers (9 out of 9 possible), while France (CAC 40), the United Kingdom (FTSE 100), Japan (NIKKEI 225), and Germany (DAX 30) cause 8 out of 9. Silver and Gold cause the financial markets 7, and 6 times (out of 9 possible), respectively, while the Hong Kong (Hang Seng) and China (SHANGHAI) markets cause 3 and once, respectively, which validates the second investigation question. Given the high level of integration and shocks between markets, portfolio diversification may be brought into question. These findings also make room for market regulators to take steps to ensure better information among international financial markets.*

Keywords: *Gold, Silver, Hedging, Safe haven, Risk diversification.*

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THE ROLE RECOURSE OF THE INVESTOR AND RISK RETENTION OF COVERED BONDS AND SECURITISATION INSTRUMENTS – A LAW AND ECONOMICS APPROACH

Katalin Dobranszky-Bartus¹ 

Abstract: *Unquestionably, covered bonds provide stability for the financial system. This stabilizing role has been recognised fully by the European regulators already after the 2007 crisis. As an outcome, the European Union finalised its Directive on European covered bonds. The most recent economic crisis due to the COVID-19 pandemic, as well as the speedy need for recovery from that crisis in light of the mid- and long term ambitions of building a sustainable and green economy [7] have accelerated the stabilising role of covered bonds. Looking at the spread of covered bonds and the spread of mortgage-backed securities (MBS), it is clear that the pricing of covered bonds is better. The author has chosen to follow the interdisciplinary approach of law and economics [1] [2] [3] [5] and use the Danish mortgage system and the European securitisation model to demonstrate their points. The author compares the incentive structure of covered bonds [6] to MBS [4]. The former financial instrument is an on-balance sheet and dual recourse debt security whilst the latter is an off-balance sheet, single recourse debt security. These structural differences have direct implications for the incentive structure for credit risk assessment and portfolio management providing partial but possible explanations partly for the pricing difference.*

Results: In this article, the author describes the regulatory requirements both for covered bonds and mortgage-backed securities. Furthermore, the author highlights the regulatory factors that impact risk incentives. One of these factors is regulatory risk retention posed on securitisation products, the so-called skin-in-the-game. *Conclusions:* The legal requirements that covered bonds have to be kept on the balance sheet of the issuing credit institution is equal to a 100% risk retention factor, which is reflected in the trust and thus in the price of covered bonds vis a vis other securitisation products for mortgage funding.

Keywords: *COVID-19 recovery, Climate ambitions, Covered bonds, Regulation, Risk retention, Mortgage-backed securities, Regulatory certainty.*

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COMPARATIVE ANALYSIS OF STRUCTURAL Σ -CONVERGENCE OF EXPORTS

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Abstract: *The paper analyses the structural σ -convergence of exports of six CEE countries to the Euro area. The countries are Estonia, Latvia, Lithuania, Slovakia, and Slovenia, which are members of the Euro area, as well as Bulgaria, which was included in the ERM II currency mechanism on 10.07.2020. The main goals are to measure and compare the structural σ -convergence of exports of the six CEE countries and to prove whether the introduction of the common currency (the euro) has an impact on the convergence. The research consists of the theoretical and empirical parts. The theoretical part systematizes basic concepts of economic, trade, club, and structural convergence. One index method used by his authors to study economic convergence has been adapted to the structural σ -convergence of exports. This is the dissimilarity index of J. Von Hagen and J. Traistaru. In the empirical part, the values of the index, by commodity groups, according to SITC, Rev. 4, for the six countries during the period 2002-2018 are determined. The index is calculated also as aggregated, referring to the total exports of the selected countries and for the whole period. The results are presented in graphical form. Based on them, the structural and dynamic characteristics of the convergence and divergence of exports of the six countries compared to the exports of the Euro area are derived. Conclusions are made about achieved the different degree of similarity, that is uncertain and unstable and so the convergence can be only partially attributed to the adoption of the euro. Methods of analysis and synthesis, induction and deduction, methods of the empirical index, and comparative analysis are applied.*

Keywords: *Convergence, Divergence, Export structure, Export dissimilarity index.*

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FINANCIAL LEASING IN THE FUNCTION OF ECONOMIC DEVELOPMENT OF BOSNIA AND HERZEGOVINA (STATISTICAL APPROACH)

Slobodan Subotić¹ 

Goran Mitrović² 

Vladimir Marković³

Abstract: *The leasing institution is typical for countries with developed market economies, although it keeps gaining more and more importance in transition countries. Therefore, the research in this paper is focused on the financial leasing market in Bosnia and Herzegovina, as one of the countries undergoing transition process. Its basic features have been assessed, together with determining turnover over the observed ten-year period, both in Bosnia and Herzegovina as a whole and in its respective entities. The research aims to establish to what extent has financial leasing contributed to the development of the small and medium enterprise (SME) sector and the economic development of Bosnia and Herzegovina. Modern statistical methods have been applied to analyze the connection and interdependence of leasing and certain macroeconomic indicators in Bosnia and Herzegovina. For the purpose and in the context of this research, the following indicators, such as the values of leasing, gross domestic product, export, import, and foreign direct investments related to the period from 2009 to 2018 are presented in the respective tables and charts. The analysis is based on the application of descriptive and econometric statistical methods of correlation and regression, as well as on the following statistical packages: IBM SPSS ver. 21, Microsoft XLSTAT. A particular, dedicated segment of the analysis refers to determining the impact of financial leasing on the level of SME investment to classic bank loans. That is, to what extent is financial leasing in the function of investment decision-making of small and medium enterprises in Bosnia and Herzegovina.*




Keywords: *Financial leasing, GDP, Export, Import, FDI, SME.*

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CASH FLOW FORECASTING FOR INTERNATIONAL PROJECTS IN THE PROCESS OF CAPITAL BUDGETING DURING THE COVID-19 PANDEMIC

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Abstract: *By predicting cash flows in the capital budgeting procedure, the profitability of an investment at the international level is determined in advance. Although investing globally provides greater opportunities for earnings, cost reduction and business diversification, all risks posed by international business must be considered when choosing a discount rate. In addition to the risks inherent in cross-border business such as exchange rate risk, country risk, the risks caused by the pandemic crisis, which relate primarily to measures taken by states to protect the population by introducing quarantine, restricting the flow of people, goods and capital, as well as activities that are endangered by a pandemic, must be considered too. If all the risks that determine the discount rate are well assessed, the cash flow forecast will be more accurate.*

Keywords: *Cash flows, Capital budgeting, Discount rate, Pandemic.*

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ANALYSIS OF RESEARCH AND DEVELOPMENT EXPENDITURE IN EUROPEAN UNION COUNTRIES

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Abstract: *Paper deals with the analysis of research and development expenditure. Expenditure per capita in European Union countries in years 2009 - 2018 and total research and development expenditure in million Euro are analyzed. The aim of the paper is to find out in which countries expenditure per capita increased the most during the observed period and in which it decreased, what was the average annual growth rate of this indicator. Contribution method will help to analyze how the total research and development expenditure in 27 European Union countries has changed, what was the share of each country in this expenditure, which countries contributed the most to this change and which the least. Research and development expenditure per capita increased average annually between 2009 and 2018 in all analyzed countries, except Luxembourg and Finland, where it decreased. The highest average annual growth was recorded in Poland (12.48%), Latvia (10.50%), Slovakia (10.47%) and Bulgaria (10.38%). Total research and development expenditure increased in 2018 compared to 2009 by 41.65%, Germany (18.11%) and France (4.29%) contributed the most to this increase.*

Keywords: *Research and development expenditure, European union countries, Contribution method.*

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IN COMPLIANT WITH LIQUIDITY PRUDENTIAL FRAMEWORK: EFFECTS AND CHALLENGES OF THE EU BANKING SYSTEM

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Abstract: *The main objective of this paper is to identify the bank business activities towards the implemented strong new liquidity measures using panel data analyses of the European Banking System after the last financial crisis. Therefore, the research is in line with other current empirical works regarding the banking firms' post-Basel III Standard adjustment as a whole. The previous heuristic approach in liquidity management is being replaced by quantitative measures of liquidity coverage ratio (LCR) and net stable funding ratio (NSFR). The research hypothesis assumes that new liquidity measures encourage banks to increase the liquid and low-profit assets whereas the high ratio of liquid assets can disrupt the fundamental functionality of the banking system and its lending activities to the corporate and private sector. Moreover, we found evidence that the banking sector adjusted their asset and liability structures in order to meet tighter liquidity regulation through the internal strengthening of the capital structure, primarily using the retained earnings, recapitalization by existing shareholders but also through hybrid and extraordinary conversion of debt into the share capital. In unchanged market conditions and without changing the operational business model it has a positive effect on maintaining regulatory requirements, even though could ultimately lead to an increase in the cost of capital transferring the same to customer structure through an increase of the net interest margin, weakening the credit cycle as a whole. Finally, the history of every financial crisis has shown that bank liquid assets cannot cover the liquidity needs of the financial system as a whole and the role of the lender of last resort (LOLR) is necessary. The empirical analysis will be done on the sample of 22 publicly listed banking firms in the European Union in the period from 2007 to 2019 using the dynamic model with Generalized Method of Moments (GMM). The results of the research are dedicated to the scientific and professional public, bank management structures in daily management as well as regulatory authorities in the function of creating and correcting macro and micro prudential regulatory policies contributing to the reaffirmation of traditional financial intermediation with lower rates of bank assets growth and moderate cyclical economic activity.*

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Keywords: *Regulatory requirements, Liquidity coverage ratio, Net stable funding ratio, Dynamic panel models, European banking sector.*

THE INFLUENCE OF SELECTED FACTORS ON THE AT-RISK-OF-POVERTY RATE OF SLOVAK HOUSEHOLDS

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Abstract: *Since the goal of any advanced society is to reduce poverty and improve the social status of the population, it is important to know the causes of its emergence. In connection with Slovakia's membership in the European Union, we have taken over European legislation in this area. The Europe 2020 strategy is currently in force in the countries of the European Union, while one of its five main objectives is "Fight against poverty and social exclusion". Poverty research is undoubtedly a topical, multidimensional problem. One of the issues it focuses on is the so-called income poverty. The poverty line is considered to be 60% of the median national equivalent disposable household income. In order for assistance to those at risk to be truly targeted at those who need it most, it is necessary to map the situation in detail and identify the factors that have the greatest impact on the incidence of poverty. In our paper, the subject of analysis will be the quantification of the influence of selected factors from The European Union Statistics on Income and Living Conditions (EU-SILC) database on the at-risk-of-poverty rate in Slovak households. The at-risk-of-poverty rate represents the proportion of people (in percent) in the whole population, whose equivalent disposable income is below the at-risk-of-poverty line. We will verify the impact of selected factors on the at-risk-of-poverty rate using a logistic regression model in the SAS Enterprise Guide statistical tool.*

Keywords: *Income poverty, Risk of poverty rate, EU-SILC, Logistic regression.*

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EUROPEAN UNION, ROMANIA AND RAILWAY TRANSPORT

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Abstract: *This paper aims to present the role railway transport plays in European Union and in Romania. The importance of this mode of transport is shortly put to the reader forefronts, while at the same time there is presented its share in land transport market. Road transport has its advantages, but its market share cannot be motivated only by market considerations; there are other factors which put this type of transport on a predominant position. The advantages of rail transport are presented face-to-face with road transport especially for passengers' transport, how railway transport can gain a greater share in land transport market, and how it can contribute to create the conditions of a more sustainable future.*

Keywords: *Railway transport, Land transport, Sustainable future.*

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THE STATE OF OPEN DATA IN THE REGIONS OF THE CZECH REPUBLIC

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Abstract: *This article discusses the state of the open data in regions of the Czech Republic. In the context of open data, there are significant differences among regions of the Czech Republic. Some regions do not publish open data at all while others have fully functional open data portals. The publishing of open governmental data can be beneficial for citizens, businesses, and also public administration and the government itself, and they are an opportunity for poorer regions to become more competitive. Because of the differences, there is a need for changes, and this article presents possibilities that are simply applicable and do not bear high costs. The sharing of information and knowledge among local governments and their organizations could diminish the differences and bring advantages and new possibilities to the poorer and less developed regions.*

Keywords: *Open government, Open data, Regional development, Regional government.*

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BASIC ELEMENTS OF THE FINANCIAL FUNCTION IN BUSINESS ENTITIES

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Abstract: *Finance and accounting are the essences and the lifeblood of the business doing of business entities. Classical financial mechanisms and instruments are adapted to the contemporary conditions of profitable business doing. The real economy is the basis of the financial economy. Public finance is a special field. Virtual, parallel finance is manifested in contemporary business doing.*

Keywords: *Finance, Accounting, Function, Market, Flow, Capital, Virtual.*

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HUNGARIAN IFRS IMPLEMENTATION FROM TAX PERSPECTIVE

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Abstract: *The influence of corporate income taxation on financial statements presented on a domestic accounting standards basis differ by countries in a wide range. Corporate income taxation in Hungary has a strong connection to the Hungarian Accounting Act. From 2016 it is prescribed or allowed for specific companies to present their financial statements on IFRS basis. The transition represented not only a challenge in the accounting system of the companies, but the state had to face new tasks because the taxation of IFRS companies had to meet the tax principle of horizontal equity and ensure the proper tax revenue. Research data arise from financial statements of Hungarian companies listed on the Budapest Stock Exchange. The average effective tax rate of Hungarian listed companies decreased after the transition. Temporary tax rules for IFRS companies were applied to reach the tax level of the companies that prepare their financial statements following the Hungarian Accounting Law. Authors compare the results with empirical findings of other European countries.*

Keywords: *IFRS, Corporate income taxation, Listed companies.*

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THE FINANCIAL STATEMENT: FROM THE ITALIAN PRINCIPLES TO THE IAS/IFRS

Nadia Oliva¹ 

Abstract: *Lgs. D18.8.2015 n. 139, which has integrated regulation 2013/34/UE, has introduced the compulsoriness of the financial statement in the civil code. The financial statement is an integral part of the balance sheet and it has become a mandatory document even from a legal point of view. Within the company's management, it is important to underline the importance of such a document, which highlights the cash flows of the activities of the enterprise and, therefore, is a very useful tool for the evaluation of the financial situation and solvency of the enterprise. Indeed, only by drawing a dedicated accounting document, it is possible to respond to the request of the second paragraph of art. 2423 of the civil code relatively to the need to draw a clear, true, and correct income statement that represents the economic, financial, and asset situation. Art. 2425 ter provides indications regarding the type of financial statement, its form, and content, as well as the comparative data. The financial statement has been the object of attention of the Italian Accounting Body that, within the auditing and update processes of the Italian accounting principles, has issued the OIC 10 (2016) principle. Therefore, the drawing of the financial statement is ascribable to the OIC 10 in the Italian framework and the IAS 7 in the international one, for companies obligated to draw the balance sheet according to rules provided for by the international accounting principles. There are many similarities between the two principles, such as the paragraph structure, the subdivision in three macro-areas, and the information contribution. However, there are also some differences, such as the financial resource of reference and the method for the determination of the cash flows of the operational management. This work has the objective to analyse the operational features and issues when drawing the financial statement according to the provisions set out by the Civil Code, by the OIC 10, and by the Ias 7, to analytically highlight such differences compared to international practices.*

Keywords *Balance sheet, Financial statement, IAS 7, OIC 10, Financial flows.*

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CLASSIFICATION OF FINANCIAL MECHANISMS OF HEALTHCARE SYSTEMS IN THE COUNTRIES OF EUROPEAN UNION

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Abstract: *In the article the problems of the classification of financial mechanisms of healthcare systems were considered. The well-known types of the financial mechanisms of healthcare systems were described and the authors argued the importance of the development of new classification of financial mechanism of healthcare systems in the EU, which will be based on the application of quantitative methods. The purpose of the research is cluster (or regimes of funding healthcare system) analysis and development for EU countries over long-term period of 2000-2017. The authors used k-means method for the cluster analysis and revealed 5 clusters (groups) for the characteristics of the different regimes of funding healthcare system in the EU countries.*

Keywords: *Healthcare system, Funding, Classification, Cluster analysis.*


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PREPARING SCHOOL GRADUATES FOR THE LABOUR MARKET

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Abstract: *Despite their determination to work and build their careers, school graduates are not sufficiently prepared to look for work and the opportunities to search a job. In most cases they are well prepared in theory and language and are literate in modern technologies. Their biggest handicap is the lack of practical skills and work experience. At the same time, graduates have to face the challenges of accelerated globalization and digitization. It is necessary to find answers to questions about what professional knowledge, practical skills, attitudes and values will be shaped by today's graduates and how education systems can develop the required knowledge and skills. The ambition of our contribution is to identify the main disparities that must be overcome in order to achieve the goal of the country's economic development strategy, in which the education system must inevitably correspond to the labour market requirements.*

Keywords: *Labour market, School graduates, Skills.*

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JUGGLING WORK AND PRIVATE LIFE IN TELEWORKING DURING THE EPIDEMIC COVID-19

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Andrej Raspor³ 

Abstract: *In 2020, the world was hit by the Covid-19 epidemic and the countries made different decisions on when and how to adopt adequate measures. One of them was teleworking; many people stayed at home where they worked and at the same time took care of their family members and assisted their school-age children.*

After one month of working from home, the respondents assessed that their family members had a better understanding of the concept of working from home. Besides, the respondents were more organised for this type of work and took care of their school-age children. The fear of losing their job has also reduced, but they were more concerned about salary cuts.

The selection of findings and measures could become a guide for employees in order to help them balance private life and work and thus manage stress when working from home.

Keywords: *Teleworking, Stress management, Stress related to teleworking, Contemporary technologies, Covid-19 epidemic.*

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TELEWORKING IN THE MANAGEMENT OF INTERNATIONAL TEAMS - EXPERIENCE REPORT

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Abstract: *The use of Information and Communication Technologies in an organizational context allows enhancing performance and defining business support strategies. The objective of this paper is to approach about the importance of teleworking in order to reflect on the conditions for monitoring International Project Teams, to contribute to the optimization of the practices instituted. In this sense, the most common business processes of organizations are supported by generic software products, also called Enterprise Resource Planning, in which the organization has been consolidating its experience over time in order to provide increasingly better services. The Design Science Research methodology allowed, based on the literature review in the area of the theme. The main contributions of the paper focus on the presentation of the fundamental competencies of the teams regarding the performance in configuration projects in view of the practical experience in the international labor market in face of this Pandemic scenario.*

Keywords: *Project management, Telework, Sustainability, Information and communication technologies, Information systems.*

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COMPARATIVE ANALYSIS OF INTERNATIONAL CRISIS MANAGEMENT IN COVID-19 PANDEMIC

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Abstract: *The article identifies the types of global recessions throughout their regular observation (since 1850), classifies the factors that caused them, reveals the features of economic shocks that accompanied previous pandemics, and the features of the 2020 recession in the COVID-19 pandemic. An analytical review of national economies' typical measures for overcoming the coronavirus and mitigating its economic consequences allowed the authors to identify problems common to all countries and specific challenges for individual groups of countries. The main article's focus is based on crisis management in Russia. The consideration of Russian plans of overcoming the COVID-19 pandemic and shoring up the economy made it possible to conclude that in 2020 the vector of support chosen by the Russian government coincides with the directions of support in most other countries, while in past crises Russia has gone its own way. Nevertheless, the article shows: the costs of direct support to the population and the most affected activities in Russia are less than in many other countries, for example, members of the G20 group.*

Keywords: *Recessions, Crises, Pandemic, COVID-19, Anti-crisis measures.*

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THE INFLUENCE OF KNOWLEDGE MANAGEMENT ON THE DEVELOPMENT OF INNOVATION IN THE ENTERPRISES IN THE REPUBLIC OF NORTH MACEDONIA-SELECTED RESULTS

Marija Pendevska¹ 

Abstract: *The business community faces rapid change due to technology development. Its influence on the business environment causes a change in the knowledge base and its possibilities on achieving new solutions as innovation thus gaining new knowledge. Enterprises are managing these continuous changes using the knowledge of its unique set of enterprise's knowledge infrastructure, employee's knowledge skills and business environment. This implies that fast knowledge development from technology development and innovation makes high pressure on the enterprises and their employees as well. The manner how this is used and utilized within an enterprise becomes the dominant challenge for every enterprise and its respective management globally. Many types of research in the past years have shown that innovations as the commercialisation of new knowledge development and knowledge management practices can assist in facing those challenges remarkably. Creating the balance between them is unique for every enterprise, for every respective management.*

This research paper consists of the following parts: introduction, selected theoretical and empirical framework and conclusion.

The theoretical framework gives a selected overview of the relevant researches in the field of knowledge management and innovation and their respective interrelation in new knowledge creation and commercialising of this new knowledge as innovation. The empirical framework describes the research design and gives the selected results obtained through the research of selected enterprises based on a Questionnaire that covers key parameters previously discussed in the theoretical framework. The research focus is measuring the existence, the exchange, the creation of knowledge within enterprises, and its usage in terms of new product development and/or improved products of the respective enterprises. Finally, in the conclusion, the study results are elaborated and their contribution to the existing body of knowledge and industry practices is discussed.

Keywords: *Knowledge management, New knowledge creation, Innovation, Open innovation, Closed innovation, Radical innovation, Incremental innovation.*

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OPERATION MANAGEMENT USING ITIL AND COBIT FRAMEWORK

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Abstract: *Information and Communication Technologies management is now increasingly challenging in a highly digital and connected world, with different services emerging for different clients with heterogeneous infrastructures, software, assets, different service requirements, security risks increasing, organizational structures not flexible to adjust. These are some of the variables to manage in Information and Communication Technologies departments. This paper aims to present a literature review to support the design of an approach for service operation management in a medium-sized organization, to improve operational efficiency, cost optimization and stakeholder satisfaction, relevant topics in any organization strategy. The applied methodology includes a literature study related with the frameworks Control Objectives for Information and Related Technology (COBIT) and Information Technology Infrastructure Library (ITIL). The main results underlying the literature review were based on the use of keywords in the subject domain.*

Keywords: *ITIL, COBIT, Service operation, Business process, ITSM.*

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HOW DATA ANALYTICS HELPS MANAGEMENT IN GLOBAL PANDEMIC SITUATION

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Abstract: *The ongoing COVID-19 pandemic is having a tremendous impact on the business organizations, governments and people around the Globe. No matter if it is a public, or private organization, the leaders and management have changed their approaches, standard operations, the way they communicate, processes and procedures. In this paper is analyzed the impact of Data Analytics on two main management pillars and more specifically: Business Operations and Human Resources Management; more precisely, how they are impacted and changed in the pandemics. We analyzed how Global IT Companies are reacting and using analytics as a tool that helps them in the day to day operations, representing some used models and patterns.*

Keywords: *Management, Corporate management, Data analysis.*

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INFLUENCE OF PERSONAL VALUES ON CONSUMER CHOICE AND INTENTION TO BUY: A CASE OF CROATIAN AUTOMOBILE MARKET

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Abstract: *This paper aimed to identify the factors and segments of car buyers based on their personal values and analyzing their relation to car buyers' choice and intention to buy. A survey involving 561 participants was conducted using the PVQ scale and additional questions about car-buying behavior. Upon collecting the data, statistical analysis was conducted that allowed for nine value types to be successfully distinguished among car buyers: benevolence, universalism, self-direction, stimulation, hedonism, achievement, and power, security, conformity, and tradition. Additionally, based on the abovementioned value types, different consumer segments were distinguished: "opened to change", "self-transcendent", "self-enhanced" and "conservative". Furthermore, the results show that segments of car buyers differ in their preferences of car models, i.e. they choose or intend to buy different car models. The conclusion presents the contribution of the paper, limitations, and guidelines for future research.*

Keywords: *Personal value types, Segments of car buyers, Car buying intention.*

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ASSESSMENT OF SALES BEHAVIOR TYPES FROM THE CUSTOMER'S POINT OF VIEW IN THE CONTEXT OF INTERPERSONAL CHARACTERISTICS

Tatiana Pethö¹ 

Ivana Ondrižová² 

Dagmara Ratnayake- Kaščáková³ 

Abstract: *The main goal of the study is to assess the 4 types of selling behavior of sellers from the viewpoint of the customer (gender differences and differences in the context of the place of residence). The research sample consisted of 203 respondents (62 % of women and 38% of men) aged 17 to 45 years (mean= 23.458, standarddeviation= 3.482), 64% of participants living in the city, and 36% of participants in the countryside.*

The research study used the DOS-Z methodology by Koval'ová and Birknerová (2018) designed to assess the four determinants of sales behavior of traders from the perspective of customers. Using an abridged version of the IAS (Interpersonal Adjective Scales) methodology by Wiggins (1991), the level of interpersonal relations. Statistically, significant gender differences were found in the assessment of stressful sales behavior, with women judging the type of sales behavior as more stressful.

Keywords: *Selling behavior, Customer, Interpersonal relations, Gender, Place of residents.*

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PURCHASING BUSINESS IN THE CONDITIONS OF THE PANDEMIC CRISIS

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Abstract: *Procurement is a function of the company that cares of everything about that is necessary for the realization of the goals of the business system and in particular it is very important for the successful operation of a trade company. Procurement is a function of the company and other business structures whose task is to supply the equipment, materials, services, products and energy needed to achieve goals of the business system. By pursuing the economic order quantities, decisions on expenditures and selection of the best suppliers we contribute to the business success. On the global level, companies are facing the impact and consequences of the COVID 19 pandemic, which also affects companies purchasing processes. In the paper are presented and analysed changes in the organization and functions of the purchasing business activities of the two companies as a consequence of the pandemic crisis.*

Keywords: *Purchasing business, Pandemic crisis, Supply, Organization, Company.*

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THE NECESSITY OF PSYCHOHYGIENE IN THE WORK OF TRADERS

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Abstract: *The rapid economic growth of many companies brings with it the need to pay more attention to issues of management and leadership of people in the conditions of a centralized model of economic management, as well as mental readiness for work and social position in business. Mental balance is one of the most important mental equipment of traders in personal and professional life. Therefore, in the article we assess the necessity of psychohygiene in the work of traders. Its role is to support and create favorable psychological conditions. The aim of the research is to determine the existence of statistically significant differences in the assessment of the attributes of psychohygiene between customers and traders. The research sample, out of the total number of 177 respondents, consists of 125 (70.6%) women and 52 (29.4%) men aged 18 - 70 years, while the average age is 41.08 years, the standard deviation is 7.913 years. Of the total number of respondents, 97 (54.8%) were traders and 80 (45.2%) were customers. The length of the respondents' internship ranged from 1 to 40 years (average 17.25 years, standard deviation 8.679 years). The research results were processed in statistical program IBM SPSS Statistics 22.00 and assessed by t- test for two independent samples. The authors focused on mental health care, proper lifestyle, stressors, work environment and time management.*

Keywords: *Attributes, Psychohygiene, Traders.*

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SOCIAL NETWORKS, COGNITIVE BIASES AND FAKE NEWS: CAN A SIMPLE COMPUTER MODEL EXPLAIN A COMPLEX PHENOMENON?

Blaž Rodič¹ 

Abstract: *Misinformation spread by individuals sharing fake news can cause problems in social, economic and democratic systems. The World Economic Forum considers the viral spread of misinformation online to be one of the main threats to our society. While the reasons why people spread misinformation likely haven't changed in the last millennia, the rise of Internet powered social networks has allowed news to spread rapidly among millions of users, and gave rise to new phenomena such as echo chambers. The question we ask in this paper is whether we can model the dissemination of fake news and the emerging phenomena using relatively simple rules in an agent-based model. We present the current state of research in the field of fake news, the agent-based modelling methodology, and the current state of our model development.*

Keywords: *Fake news, Disinformation, Cognitive bias, Emergent phenomena, Social networks, Agent-based modelling, Social psychology.*

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MODELLING SUBJECTIVE HAPPINESS WITH A SURVEY POISSON MODEL AND XGBOOST USING AN ECONOMIC SECURITY APPROACH

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Manuela Alcañiz³ 

Abstract: *The Living Conditions Survey of Ecuador contains a count variable measuring the subjective happiness of respondents. Two machine learning models are implemented to predict the level of happiness as a function of economic security among other factors. Even if the predictive performance is low, due to the fact that individuals tend to polarize extreme levels of happiness (either very low or very high), economic security is one of the most relevant determinants of a higher level of expected happiness, when we control for basic socio-demographic characteristics. Additionally, the analysis of missingness patterns in the target variable reveals some respondents' characteristics at the time of self-reporting satisfaction*

Keywords: *Machine learning, Living conditions, Count data, Occupation, Missingness.*

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CHALLENGES IN MANAGING INTELLECTUAL PROPERTY RIGHTS DURING CORONAVIRUS PANDEMIC

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Abstract: *The socio-economic impact of the pandemic on all social spheres is huge, but like any crisis, for some it is opportunity to create, develop and promote solutions. The coronavirus pandemic has brought many changes. It has forced us all to find new ways of working, interacting and living. The field of intellectual property is particularly affected by the coronavirus pandemic, its strong influence has affected all branches of intellectual property, especially the field of copyright and patents. During the COVID-19 Pandemic, numerous anomalies in the consumption of copyrights were observed, which coincided with the isolation measures, from drastically increased consumption of illegal pirated content via the Internet, especially in countries with lockdown, through a sharp increase of Disney+ and Netflix streaming platform users.*

The identification of products that have the word Corona in their name – in their trademark, with the virus has led to a sharp drop in consumption of some products, but also to increased sales of others. The pharmaceutical industry has invested huge funds in the fight against this global challenge, especially in the field of treatment of viruses, new drugs for the prevention, as well as finding a vaccine against COVID-19. This paper discusses the challenges faced by the management of intellectual property rights and potential response measures.

Keywords: *COVID-19, Innovation, Intellectual property, Patents, Coronavirus Pandemic, Generics, Drugs, Vaccines, Cybersecurity.*

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THE RIGHTNESS-JUSTICE BINOMIAL. CONCEPTUAL CONSIDERATIONS

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Abstract: *The paper makes some theoretical contributions, regarding the concept of the theory of rightness. In the first part, several scientific concepts are identified and defined as elements that belong to the theory of rightness as fairness. The second part of the paper analyzes the logical relations between rightness and justice, affirming and arguing that rightness is the state of a social system in which the natural right is verified, and justice is the state of a social system in which positive right is verified. Finally, the concept of the theory of rightness is defined logically, epistemologically and methodologically.*


Keywords: *Rightness, Justice, Theory of rightness.*

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KEYWORD ANALYSIS WITH USING STATISTICAL METHODS

Dominika Krasňanská¹ 

Mária Vojtková² 

Abstract: *There are currently more than a billion websites worldwide. In so many websites, everyone wants to be visible to search engines through the keywords that people search for. The article deals with the process of creating keywords, through which we can identify the intention of the searcher. The process of creating keywords consists of several steps, namely the collection of keywords, subsequent cleaning of keywords, their categorization and the last step is the interpretation of keywords. The paper focuses mainly on the categorization of keywords, which we obtain through the use of statistical methods, which includes a method of visualizing relationships between keywords by determining the strength of the association between words called concept linking or term map.*

Keywords: *Keywords, Keyword categories, Statistical methods.*

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THE GERMAN HISTORICAL SCHOOL OF ECONOMIC THINKING AND SUSTAINABLE AGRICULTURE

Judit Beke¹ 

Abstract: *In modern economies, creating market values is a key consideration. The science behind this is neoclassical economic thinking which disregards space, time, or social and environmental reality. The purpose of this paper is to review the 'Methodenstreit', the first methodological dispute between Carl Menger (founder of the Austrian School of Economics) and Gustav von Schmoller (German Historical School of Economics). Menger's approach was ahistoric, individualistic, universal and deductive, whereas Schmoller's approach was inductive, holistic and historical-ethical. Although their antagonistic debate was mainly about economic methodologies, it provides indications in the context of sustainability and sustainable agriculture where the aspects of the historical school are even more relevant.*

Keywords: *German historical school of economic thinking, Gustav von Schmoller, Sustainable agriculture.*

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THE NEOCLASSICAL DOCTRINE AND ITS IMPACTS ON AGRICULTURE

András Schlett¹ 

Abstract: *The study aims to describe how the paradigmatic core of mainstream neoclassical economic perspective became dominant in today's agricultural policy. The main underlying premises and evaluation criteria of the classical – neo-classical economic theories transformed our thinking about agriculture. Focusing on markets and efficiency limited the functions of agriculture to the production of goods and profit maximization. As a result, the financial, environmental, consumer protection, and other ethical aspects were considered to have a negative impact on the effectiveness of market efficiency. This study describes the main characteristics of modern economics such as financial interest, the principle of efficiency, absolute and comparative advantage, etc. and it analyses their impacts on the agricultural economy and the larger agricultural policy debates.*

Keywords: *Agricultural policy, Neoclassical mainstream economic, Economic and non-economic values.*

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GREENHOUSE GAS EMISSIONS PRODUCED IN AGRICULTURE SECTOR IN EU

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Abstract: *Each economy must adapt its activities to the protection of the environment. It is now an essential part of everyday life, in the face of various climate changes. The Europe 2020 strategy sets out a set of objectives in the EU, including those promoting environmental sustainability, called sustainable growth. The aim of the paper is to determine, if the performance of the country, in the area of greenhouse gas emissions reduction is adequate to the strategy Europe 2020. In the analysis of greenhouse gas emission reductions, we will also focus on the agriculture sector and compare the development over time with the development in other EU countries. The analyzed period is 10 years, from 2009 - 2018. The article investigated the performance of greenhouse gas emissions in the example of EU (including the Great Britain) countries.*

Keywords: *EU, Greenhouse gas emissions, Agriculture, Europe 2020.*

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HOUSEHOLD/INDIVIDUALS IN THE PROCESS OF PRODUCTION AND DELIVERY OF ELECTRICITY FROM RENEWABLE ENERGY SOURCES – PHOTOVOLTAIC SYSTEMS

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Abstract: *First and foremost, the main inspiration for the specific problematics in this paper is solar energy as clean and profitable energy for businesses in the Republic of North Macedonia.*

The question that arises as the basis is finding the reason why the progress in the sector of renewable energy sources in this country is still slow and insufficient.

The results and conclusions of the research shall be achieved via comprehensive analysis, and by finding the answer to the posed question through the: theoretical analysis, the inductive and deductive methods, as well as description shall be used, whereas the techniques utilized shall be questionnaires, interviews, observations.

By summarizing in one place all the theoretical and empirical aspects, we are finding the answer to the main question asked: One of the possible reasons for this actual situation is the fact that so far there is no possibility in this country for individuals to be involved in the process of production and transmission of electricity in the energy system.

The goal is achieved in this paper through providing specific guidelines and suggestions regarding the improvement of the legal framework in the Republic of North Macedonia, emphasizing on benefits if the households are allowed to deliver their produced solar energy and considering the possible ways to remove the determined obstacles for implementing this idea.,

Keywords: *Electricity, Solar energy, Republic of North Macedonia.*

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**LEVELS OF SOME PRIORITY SUBSTANCES ON ADRIATIC SEA,
ALBANIA****Aurel Nuro¹**
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Abstract: *This study evaluated levels for organochlorine pesticides (DDTs, HCHs, Heptachlors, Aldrins and Endosulfanes), their residues, polychlorinated biphenyls (PCB) and polyaromatic hydrocarbons (PAH) in water samples of Adriatic Sea, Albanian part. Water stations were chosen near the main river estuaries of Albania (Vjosa, Semani, Shkumbini, Erzeni, Mati and Buna rivers). These rivers have catchment areas that cover almost all of Albania. First, agricultural, industrial and urban waste is transported in these rivers and after that they finished in Adriatic Sea. Water samples were analyzed for five years from February 2015 to December 2019. Liquid-liquid extraction was used to isolate chlorinated pollutants and a florisil column was used for clean-up procedure. Analysis of organochlorine pesticides (according to Method EPA 8081B) and 7 PCB markers were realized using GC/ECD and RTX-5 capillary column. The PAHs were isolated by liquid-liquid extraction technique and after sample concentration qualitative and quantitative analyses were performed by the GC/FID technique.*

Organochlorine pollutants were detected for all stations of Adriatic Sea because of new arrivals by agricultural and industrial activity in river basins. The highest levels were found near Shkumbini and Semani estuaries due to impact Myzeqeja agricultural area. New arrivals from water irrigation and rainfall influence in found levels. Degradation products of pesticides and volatile PCBs were found at higher levels for all samples analyzed. The levels of some individual organochlorine pesticides were higher than EU and Albanian norms for Semani and Shkumbini rivers. Also, PAHs were found at higher levels for Semani River because of extracting-processing industry in Patos-Marinza area. Monitoring of organic pollutants in water of Adriatic Sea should be continuous because of its importance in fishing, tourism, recreation and Albania economy overall.

Keywords: *Organochlorine pesticides; PCBs; PAH; Water analyzes; GC/ECD.*

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HEAVY METAL ACCUMULATION AND CHEMICAL COMPOSITION OF ESSENTIAL OILS OF LEMON BALM (*MELISSA OFFICINALIS* L.) CULTIVATED ON HEAVY METAL CONTAMINATED SOILS

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Abstract: *Comparative research has been conducted to allow us to determine the content of heavy metals and chemical composition of lemon balm oils, as well as to identify the possibility of lemon balm growth on soils contaminated by heavy metals. The experimental plots were situated at different distances of 0.5 km, and 15 km, respectively, from the source of pollution the Non-Ferrous-Metal Works (MFMW) near Plovdiv, Bulgaria. On reaching flowering stage the lemon balm plants were gathered. The content of heavy metals in leaves of lemon balm was determined by ICP. The essential oils of the lemon balm were obtained by steam distillation in laboratory conditions which were analyzed for heavy metals and chemical composition was determined. Lemon balm is a plant which is tolerant to heavy metals and can be grown on contaminated soils. Heavy metals do not affect the development of lemon balm and the quality and quantity of oil obtained from it. Forty components were identified in the oils. The quantity of identified compounds corresponds to 98.82-98.83% of the total oil content. Among the detected compounds, beta-citral (neral) (19.31-20.78%), alfa-citral (geranial) (18,65-19,12%), β -caryophyllene (14.76-16.28%), α -cadinol (3.88-4.74%), geranyl acetate (3.49-3.59%), trans-geraniol (3.40-3.51%), germacrene (3.18-3.28%), citronellal (2.94-3.03%), nerol (2.63-2.71%), neryl acetate (2.42 -2.49%) were the major compounds. The essential oil of *Melissa officinalis* L. can be a valuable product for the farmers from the polluted regions.*

Keywords: *Contaminated soils, Essential oil composition, Heavy metals, Lemon balm.*

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