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SESSION I

Economic development and policy

- 1) Regional economic cooperation
- 2) Energy and energy development
- 3) Industrial Management
- 4) Agriculture
- 5) Tourism
- 6) Services and trade
- 7) Food-production, safety and security
- 8) Demography
- 9) Employment and Unemployment
- 10) Governmental economic policies

FME(C)A methods as a key factor on the reliability and safety of the technical systems towards sustainable development in the industry sector

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Abstract

The purpose of this paper is through a concrete case of analysis in industrial technical systems, using FME(C)A (FMEA/FMECA) methods and tools as they possess as working methodologies, to provide suggestions for increasing the reliability and safety of the technical systems. In this way being increasing the efficiency and effectiveness of technical and technological systems towards sustainable development in the industry sector.

The main objective of this paper is also to analyze the failure mode (failure mode: manner in which an item fails), causes and effects on the technical systems, and then apply FME(C)A methods. The Failure Modes and Effects Analysis (FMEA), and Failure Mode, Effects and Criticality Analysis (FMECA) procedure, is a tool that is performed on the technical systems. The FMECA extends FMEA by including a criticality analysis which is used to quantify failure effects and severity. The criticality for each item is obtained by summing the criticalities for each failure mode that have been identified for each item of the system. The reliability is the ability of an entity (e.g. technical system) to perform the required functions under stated conditions for a specified time. While safety is the ability of the entity to avoid, under given conditions, critical or catastrophic events, with consequences in the form of damage to the equipment, or other injuries or harms to human health.

The Risk Priority Number (RPN), as a important quantitative index, is used to analyze the risk associated with potential problems identified during the failure mode and effects analysis, and to rank the failure modes and effect in the criticality analysis of the technical systems.

Keywords: technical systems, FMEA/FMECA, failure mode, reliability and safety, Risk Priority Number (RPN).

The Financial Crises and the Monetary Policy Responses: A Comparison between Federal Reserve and European Central Bank Policies

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Abstract

World economies have experienced several severe financial crises that created a worldwide turmoil beginning from the place of their initial burst and then spreading its effects all over the world. The most recent financial crises had serious effects in the world economies, which some countries experienced earlier than others some later and with a different weight of the consequences. The financial crises of 2007-08 was triggered by the collapse of the U.S. housing market in 2006 and followed by the deterioration of the market conditions precipitously and rapidly. The main purpose of this research paper is to analyze the central banks' actions through monetary policy to alleviate the perils that the financial crises might have had brought. In order to do that we focus on European Central Bank and Federal Reserve Policies as US is the place where the crises initiated and Europe because of the countries that were hit the hardest during the financial crises. In order to measure the aggressiveness of the policies that Fed and ECB followed were better observed by the difference of the Fed fund rates and US 3 month LIBOR rates in case of Fed policies, and the difference between 3 months Euro Libor rates and ECB interest rates in the case of ECB policies.

Keywords: Financial crises, central banks, monetary policy, European Central Bank, Federal Reserve

The role of young people in the implementation of the SDGs: Exploring best practices

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Abstract

The 2030 Agenda for Sustainable Development explicitly acknowledges the key role of young people as “critical agents for change” and indispensable partners in its implementation. Addressing their needs, by fostering an enabling environment for their empowerment can have a multiplier effect in making advances in the context of the goals. This is particularly important for developing countries, where the majority of young people live.

The main purpose of this research is to identify the variety of existing ways in which young women and men are already involved with the SDG implementation as well as new emerging trends and untapped mechanisms for youth participation at the heart of 2030 Agenda. At the end, the research will identify those practices that are relevant to the Albanian context and build a set of recommendations for the different stakeholders in Albania.

Keywords: *SDGs, youth engagement, mobility, Albania*

Subsistence as a very important challenge in the old people care

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Abstract

The old people represent a big and very specific category of the population.

This research investigates the subsistence and the challenges of the old people living, primarily in terms of modern living in the Republic of Macedonia.

All age groups have their own specifics in the different periods of the social development which influence the modern living, including the age period of the old people, as well.

However this research is related to a big group of the population older than 60, investigating the most intensive challenges in the modern living.

The investigation of this aspect related to the subsistence showed that the conditions of the old people are characterized with a modest way of living. A very significant percentage of the old people cut the overheads, cook two or three times a week, use the cheap electricity tax, take care of the water misuse, and many other facilities which are in their opportunities. The old people also cut off their medicines buying, keeping in mind that this expense covers a very big part of the familiar budget.

This research emphasizes the need to increase the social consciousness in order to make a law for social care of the old people where it will be included the basic social, medical, economic and cultural living of the old people. The legal acts and regulations is excepted to include the rights of the old people for dignified living as well as the obligations of the family, the local and regional institutions and the state, as a whole.

Keywords: *old people, family condition, subsistence.*

“Are the elected officials chosen in free, fair and frequent elections: the case of the city of Durrës in Albania?”

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Abstract

Albania has started the transition period in 90s, after the communist regime collapsed and currently is a parliamentary republic with legislative powers confers in the Parliament, and executive powers exercised by the Government and led by the Prime Minister. Regarding the electoral system, the Parliament of Albania is a unicameral body. The electoral system has been changed and it has passed from controversial election system to regional proportional representation system. Now the members of Parliament are chosen with closed candidate lists in 12 constituencies that are part of the administrative regions of Albania. The electoral system has an important role in the political process of a state where they dictate how the votes cast for the political parties or about the coalitions that are converted into parliamentary mandate. A part of the paper is focused also in the history of elections in Albania, so it gives a general overview about the electoral system, starting from 1991 until today's elections. Political parties are an important element and the development of a democratic system and the electoral system affects democracy nowadays. Both are elements which give the system either democratic character or authoritarian or dictatorial. Exactly even Albania for 45 years has been leaded by a single party and by changing the system, it also changed the concept for political rights and freedoms and further electoral systems which gives assistance to the appearance of more than one political party in Albania.

The main focus of this paper is to understand the electoral system if it is free, fair and democratic in Albania and whether the elected officials are chosen in free, fair and frequent elections. The methodology used in this paper is both quantitative and qualitative method, and in order to achieve results a research survey has been used and the main focus of the survey questions has been the city of Durres.

Keywords: Electoral system, Albania, Political parties, Democracy, etc

The wave of influxes in the Balkans in the last twenty years

Agron Kurtishi

„Mother Theresa“ University

Avni Avdiu

„Mother Theresa“ University

Abstract

The phenomenon of migration is as early as the civilization itself. Nowadays, the migration is a growing problem all over the world. It is a complex global problem that affects all countries. Migrants all around the world on daily basis risk their lives in attempting to find safety or a better life.

In everyday life one often uses notions and terms related to the displaced, refugees, immigrants, asylum seekers, etc., which basically mark the persons abroad. However, uncertainty in understanding and distinguishing the aforementioned notions still prevails. Often in the media, war-fleeing people are not called refugees, but emigrants. For this reason, it should be insisted on clarifying the volume and the content of notions defining the status of migrants, refugees, and asylum seekers at the present time.

Over the last twenty years in the Balkans, especially in and out of the lands inhabited by Albanians, there have always been many refugees, immigrants, and asylum seekers, both Albanians and foreigners. These influxes in and across the borders occurred due to the various crises and wars in Kosovo, Macedonia, Syria, and other countries of the East which caused large political, economic, and social changes in regional and global dimensions.

Keywords: war, refugees, migration, asylum, Balkans, Middle East

Changes in the structure of employees in the Republic of Macedonia in the period 1999 - 2015, condition and implications

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Abstract

Unemployment is one of the biggest problems facing the Republic of Macedonia since the beginning of its independence. Thus, within a certain period of time the unemployment reached an incredible 39%, but according to data from the State Statistical Office (SSO) in the past few years, unemployment has fallen to around 25%. However, again according to the SSO data, it can be noted that in the period under review not only does not significantly increase the total number of employees, but also that the structure of the total number of employees is significantly changed. Hence the need for a thorough and impartial analysis of unemployment and changes in the structure of employees in the reference period, in order to consider the possible implications for future economic development. These issues are the subject of elaboration in this paper.

Research Methodology. Analytical-synthetic method applied in statistical analysis of official data for the structure of employees in the Republic of Macedonia published by the State Statistical Office.

Keywords: Unemployment, employment, structure of employees, economic development

DEREGULATION AND LIBERALIZATION IN THE INTERNATIONAL AIR TRANSPORT

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Abstract

An efficient air transport industry is a strategically important location factor for an export-oriented economy like Germany. The competitive environment for German aviation actors has changed considerably in recent years.

The global aviation industry has undergone a fundamental structural change in recent decades. The main trigger was and is associated with the progressive globalization emerging growth areas, particularly in Asia. It also came to worldwide liberalization and deregulation progress on international air transport markets. Together they led to the creation of a host of new airlines. It is assumed that the international aviation in the coming years will continue to develop very dynamically. The growth centers will continue to shift towards Asia, the Middle East and Latin America, where in the face of an ever-growing middle class; the demand for air travel is expected to rise noticeably.

From the German air transport actors themselves customizable parameters of competition are - about alternative forms of work organization - the labor costs, labor productivity and the company-specific labor and social standards as an employer-financed company pension or a company health management.

High labor and social standards are an outstanding feature of the regulatory concept of the social market economy, to which - profess almost all political parties in Germany - to a lesser extent. A receipt of these standards in labor-intensive aviation sector is all the more possible the more competitive are the internationally competing airlines. According to a study that was done showed that competitiveness in international air traffic is more than distorted.

Keywords: *Deregulation, Liberalization, air transport*

Global economic and demographic trends in the Macedonian context – the consequences

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Research focus: *Challenges of the region and Macedonia as a country with mixed ethnic, cultural and religious groups, at a time when economic development centers move from the West to the East and when demographic parameters change*

Abstract:

Forecasts from more relevant international institutions predict two global trends: First, the shift of economic centers from the West to the East, and second, a demographic imbalance in Europe over Africa and Asia.

This is confirmed by the European Commission's "Global Europe 2050" study in 2012. Although more than 71% of the population in Asia lives with less than \$1 a day, Asian consumers become increasingly richer with double incomes in the last five years. Currently, over 43% of mobile phones are sold in the Asian continent, and 35% of cars are sold in the same continent in 2009. Over the past five years, Asia has accumulated half of the world GDP growth.

According to Zbigniew Brzezinski, 25% of the world population was living in Europe in 1900, while in 2000, there were only 12%, and there are predictions that in 2020 there will be living only 9% of the world population, with a negative decline of -32. Asia is expected to have a population of 4.582 billion in 2020, or, there will be 910 million more people only during 2000-2020. Africa will double the percentage in the world population estimation from 8% to 16%.

History shows that when China and Europe have had roughly the same economic development, the Mediterranean and this part of the world have become not only trade center, but also a center of cultural and civilizational change. The issue we want to treat is: How will these movements be reflected in Macedonia not only as a country located in the middle of the Balkans, but even beyond, in a region with ethnic, cultural and religious diversity that have not always been in harmony? Second, can this country and this region change these disadvantages into advantages? Relevant sources are used for this paper related to economic and demographic trends, while for Macedonia the data is obtained from official institutions. The method of study is comparative, but other known methods are also used for this type of study.

Keywords: economy, demography, development, world, globalization

FOOD DIPLOMACY FROM THE GASTRO-NATIONALISM TO THE INTER-REGIONAL COOPERATION

Vedran Obucina

Abstract

Within different scopes of conflicts in the South-East Europe, food also plays its role. Among various myths, there is present the myth of national cuisine. Symbolical connection between an identity politics and food makes everyday link between social actors and their cultural background. As a product of particular national consciousness, gastronationalism emerges. I define it as an element of political and cultural identity based on type of food and style of its preparation, and as an answer to the globalisation of food industry. In the Balkans, such approach includes gastronational strategies of branding the “national” specificity of foods. For example, there are numerous discussions over the “ćevapčići” origin and idea; conflict between pork and lamb nutrition in Bosnia and Herzegovina; debate about the “Bosnian”, “Serbian”, “Turkish” and “Greek” coffee; emblematic farewell to “burek” in Slovenia in the early 1990ies, etc.

Of course, food as national identity and political weapon has its other side, within the frames of European Union. Many food wars have been fought here as well, but the essence of UN and EU agreements about food and its preparation give tremendous advantage to the traditional and original foods. The brands of PDO, PGI, and TSG is a solid basis for the cooperation and positive food diplomacy, as a way of sustainable development in the inter-regional context. There are numerous inter-regional and cross-border cooperation aimed at common nutritional and historical backgrounds as a basis for deeper mutual respect and development. Croatia and Slovenia succeeded in such approach with Italian, Austrian, and Hungarian counterparts, and the same is developing now in Vojvodina. This article also explores the possibilities of cross-border cooperation on food tourism, food memories, and food trails between Balkan countries and their respective EU members.

Banking stability in Republic of Macedonia during the global financial crisis of 2007

BlertaKondri

Mother Teresa University

ABSTRACT

A stable and competent banking sector is essential for a stable macroeconomic environment and sustainable economic growth. The increase of financial innovation, globalization and deregulation in recent years was associated with a very profitable banking sector all over the world, until the beginning of the financial crisis in the third quarter of 2008. Since then, bank performance was deteriorated and needs time to fully recover. While there is a large body of literature on profitability of banks and the impacts of global financial crisis on it, there is a little empirical research on this issue for the Republic of Macedonia. In an attempt to fill this gap, the purpose of this paper is to provide empirical evidence on the impact of financial crisis on indicators of profitability of the banking sector. For testing the structural changes in size and direction of specific profitability indicators during the crisis period are used the econometric estimation techniques for the period 2000-2013. The empirical findings indicate that the financial crisis had negative impact on the two main profitability indicators, ROA and ROE.

Key words: Profitability, banking sector, financial crisis, ROA, ROE

“Children are integrated”. The perception of integration among different generations of Kosovan-Albanian migrants in Germany and Switzerland

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Abstract

Through a biographical approach this article explores the perception of integration of Kosovan Albanian migrants in West European countries. Germany and Switzerland have been the main destinations for KosovanAlbanian migrants. They represent one of the first migration flows toward West Europe, starting from the early 1960s. Initially they enter destination countries as guest workers via bilateral agreements between origin and destination counties with expectation of temporary stay and return. However, this group of migrants did stay permanently despite their primary intention to return once the employment contract came to an end or after improvement of the situation on their home country. They served as the basis for constructing the Kosovar diaspora building networks and triggering chain migration for three other following migration flows; asylum-seekers of second flow during 1980s and 1990s, asylum-seekers and refugees of third flow during war years and since 2000, and the actual flowssince 2013 but also flows of economic migrants and family reunification.

The migrant's biographies tell us that their integration process has been difficult. They recognise as reasons, the low paid jobs, and difficulties to upward mobility, difficulties to learn the host country language, lowliness and many more. Despite these many of them did decide to bring their families along and have been active part of the host countries societies. While for their children, most of them second generation, the integration process was simpler. They had different integration strategies in compliance with improved economic conditions within family. They grow up with two languages simultaneously, have achieved to be involved in the educational processes and to provide a job. These things made them feel integrated into host society and labour market. Therefore, this generation of migrants suppose to have achieved an individual independence, however their parents sometimes percept as an obstacle for returning to the country of origin.

Key words: migration waves, Kosovan Albanian migrants, integration, first generation of migrants, second generation of migrants

The Long Run Relationship between Tourism and Economic Growth in Western Balkan Countries: A Panel Co-Integration Analysis

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Eglantina Hysa²

ABSTRACT

Nowadays, tourism is a fast-growing industry, and one of the most vital sectors that drive the economic growth. This paper analyzes and tries to shed light in the contribution that tourism has on economy. The analysis is done for four Western Balkans countries, making a comparison between their tourisms, economies and tourism impact on GDP. The model is done for 14 years, for the period 2000-2014. Independent variables included are the number of foreign arrivals, visitor exports, foreign overnights in hotels and capital investment. While as a dependent variable stands the tourism contribution to GDP. Since the variables are not stationary, has been applied Panel Johansen Co-integration technique. After implementing the model, the results show that some of tourism independent variables such as visitor exports and capital investments influence the economic growth of the four countries, but in total we can say that there is no long run relationship between the tourism and economic growth of these countries.

KEYWORDS: *Tourism, Gross Domestic Product, Regression Model, Economic Growth, Western Balkan Countries*

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The Role of Transportation in Sustainable Development Goals

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Abstract

Sustainable development basically involves a process of improving well-being and prosperity of the people (communal and economic) and at the same time taking care for available resources (mostly ecological) implying care for present and future generations. The sustainable development goals are a major step forward in integrating transport with other global goals. Development of sustainable is very important in every pattern especially in this century.

Sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change are made consistent with future as well as present needs.

Sustainable development at the transportation sector can be divided into three major sections: society, economy, and environment. Transportation sustainable development requires balancing to achieve the minimum expectations in these three sectors. Strategies like promoting public transportation, improving road management, pricing policies, vehicle technology improvement, using clean fuels, cultural enhancement, and transportation planning can be used to increase the role of transportation in sustainable development goals.

This paper evaluates the role of transportation and the effect of using these strategies in sustainable development goals.

Keywords: Sustainable development goals, transportation strategies, environmental quality

Refugee integration and role of CBOs in the host country

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ABSTRACT

Forced migration has increased more than before with the world conflicts. Europe has seen a large influx of refugees and migrants over a long period, and the number is increasing rapidly and one million refugees/asylum seekers came to Europe in 2015. With the refugees arriving, host countries get the responsibility of integrating them into the society. As refugee integration is a two-way process, civil society organizations (CSO) have got more importance. CBOs are as one of the CSOs, they are more active in refugee integration process. Norway is a European country which receives more refugees from conflict zones such as Syria, Afghanistan, Somalia, Eritrea. When refugees are in host countries, they are suffering from both pre-migration stresses and post migration stresses. According to previous researches, social connections are more important for them to release the stress. In this research paper, I focus on how the CBOs contribute to refugees' social integration and what are the challenges CBOs face in the program implementation. I use case study research method and I have studied three CBOs in Kristiansand, Norway. Social capital theory of Putnam's and Fukuyama's view on social trust provide the theoretical background for the research. According to my research CBOs are more important for building social cohesion, mobility and social networking. More studies related refugee integration has given less attention to CBOs and more attention to ECBOs. This research has emphasis the importance of the host society and CBOs in the refugee integration process.

Keywords: Forced migration, Refugee integration, CBOs, Host society, Social network

UNEMPLOYMENT IN MACEDONIA BEFORE AND AFTER WORLD CRISIS

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ABSTRACT

In each economy of each country the unemployment is one macroeconomic problem for whom the solution is very difficult to find, even though each country tries it's best to lower the unemployment rate to the desired rate. Macedonia has the same problem even though there are various measures and policies taken to lower these unemployment rate.

There are various types and reasons for the unemployment, some of them will be discussed in this paper such as: compulsory and voluntary unemployment, meanwhile we are going to analyze in more details one of the main causes which is the world crisis and the other one which is the age of the unemployed, the sectors in which they are employed (formal or informal), the gender, development of the economy of the country (developing stage in which the country is), realized taxes of the incomes, lack of money etc.

The purpose of this paper is to analyze in more details the causes of unemployment and to recommend which measures should be taken that will effect for Macedonia to be ranked among the lowest unemployment rate countries in the region, but not as a result of the youth migration but as their activism in labor market.

Key words: *unemployment, labor market, sector, migration.*

HIGH-GROWTH ASPIRATION ENTREPRENEURSHIP: A MULTI-COUNTRY ANALYSIS USING GEM DATA

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Abstract

High-growth aspiration entrepreneurship has attracted significant attention in the literature (Hermans et al., 2015; Lim et al., 2015). This paper examines simultaneously the impact of individual characteristics, institutional factors and country-level control variables on high-growth aspiration entrepreneurship. The focus is on the employment growth aspirations of newly-established ventures in both developed and developing economies. The individual characteristics data is obtained from the Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS), covering 62 countries (divided into innovation-driven and efficiency-driven economies) over a seven-year period (2005-2011). Multi-level estimation technique, which accounts for the hierarchical nature of the data, is used to examine employment growth aspirations. As an alternative method, a dichotomous choice model (probit) is also applied to estimate the factors influencing high job growth in young businesses. The results indicate that most of the individual characteristics have a positive and significant effect on employment growth aspiration in both innovation and efficiency-driven economies. Specifically, the entrepreneur's education, household income, social networks, skills and perceived opportunities are significant determinants of growth aspirations. We also find that employment growth aspiration is gender sensitive, with male entrepreneurs being more likely to have high growth aspiration. Small-size governments and effective property rights protection are also found to influence growth aspirations of young firms positively while higher levels of corruption have a negative impact on growth aspirations. Entrepreneurial growth aspirations are also found to benefit from Entrepreneurial Framework Conditions (EFC). Finally, we find that the effect of both individual characteristics and the institutional settings varies according to the stage of a country's economic development.

Keywords: *High-growth entrepreneurship; young firms; entrepreneurial framework conditions; institutions; property rights protection; Global Entrepreneurship Monitor; multi-level modelling* JEL: L26; J24; D23; D73; D84

EU foreign policy via Conditionality and Sustainable development in Western Balkans

Doc.Dr.Enver Abdulahi

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Abstract.

European Union (EU) conditionality in Western Balkans (WB) attempts to absorb this part of Europe via transformation. Through the transfer of policies and regulations, and by norm diffusion, the EU is able to operate beyond the borders of its formal and legal authority in order to achieve its goals in meeting the aims of 2030 Agenda for Sustainable Development. In managing the perceived aims of its strategy, the EU imposes strict conditionality on countries in Western Balkans. As the enlargement is postponed and conditionality tightens, the EU governance is restructuring the possibilities for democratic engagement for these WB countries with the institutional structures of the EU. From sustainable development perspective, EU engagement brings for these WB countries distinctive advantages: harmonized legislation and financial assistance. However, this paper argues that there is direct correlation between conditionality policy of the EU and the investment in sustainable development goals in Western Balkans. EU investment structured funds intensifies 2030 Agenda for Sustainable Development goal requirements which adds to the pressure on the governments of the Western Balkans countries in compliance with EU conditionality. This paper further argues, this perspective lacks historical depth and fails to capture tensions between competing principles and conflict among domestic interest groups in the Western Balkans countries. The paper calls for a more critical reading of the normative power argument and identifies shifts in the domestic political economy as the key factors behind the EU's support for Agenda 2030 for Sustainable Development Goals.

Key words: *EU foreign policy, conditionality, Sustainable Development Goals, compliance with EU requirements.*

Western Balkans' regional cooperation and the role of the EU integration process

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Abstract

Regional cooperation in the light of an integrated and developed Western Balkans region is an aim proclaimed by all the enlargement countries. This determination is formalised in bilateral, multilateral and regional declarations as well as stands as one of the main political priority set out in their enlargement policy frameworks including their stabilisation and association processes. On the other hand, the European Union holds a set of political and financial assistance tools to boost the dynamics of cooperation within the Western Balkan region into key areas and sectors where cross-border and multi-country cooperation is most useful to support the enlargement countries prepare to meet the accession criteria.

However, this complex setting which leads the above mentioned process faces challenges. When planning certain measures, the needs and challenges of the enlargement countries to meet the political and economic membership criteria and to align themselves with the Union *acquis* must be the starting point.

This paper sets forward the various political and economic issues/ challenges actual to both the Western Balkan countries and Turkey in establishing regional cooperation and making this cooperation sustainable and the instruments of the European Union that complement and enhance them by supporting regional and territorial cooperation, facilitating coordination and effective horizontal implementation mechanisms.

The economic crisis undoubtedly underlined the need for all countries in the region to strengthen their governance, in particular and improving competitiveness in order to meet economic accession criteria. None of the Western Balkans enlargement countries enjoys the status of a functioning market economy, public financial management systems need further strengthening and structural reforms need to be prioritised, prioritised and properly implemented. Significant external imbalances remain a key challenge in most Western Balkan countries. The paper also analyses the 'Macroregional strategy' as an integrated framework endorsed by the European Council, and supported by the European Structural and Investment Funds, addressing common challenges faced by a defined geographical area which thereby benefit from strengthened cooperation contributing to achievement of economic, social and territorial cohesion.

CAN WE MAKE A GREEN TOURISM BRAND? THE EVIDENCE OF MACEDONIA

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Abstract

Every country has strengths and weaknesses and a good brand may project a country's strengths while recognizing its weaknesses. Despite the fact that Macedonia has been an independent state for more than two decades, it seems that it is still trapped in its transition period and still strives for creation of some new patterns. The article draws on primary and secondary data to provide insights into the processes and conflicts over efforts to create a green tourism brand in Macedonia. Moreover, the research assesses how Macedonian hospitality industry stakeholders manage the environmental quality, which directly leads to increase of destination's competitiveness. It has a practical significance since it discusses the level of environmental quality of Macedonia as a base for creating a national green tourism brand. The paper underlines that tourism branding in Macedonia cannot be conducted successfully without considering the context of "green" tourism. It was found that the improved image along with the enhanced competitiveness are strong determinants, provoking better interest than the increase of number of guests. Yet, large number of surveyed hotel managers lack measures to reduce the conventional energy use and replace it with renewable sources of energy. Although being fully aware of the importance of the environmental concept, this is not the managerial priority of Macedonian hotels. These findings may assist in further steps when creating marketing strategies to enhance country's distinctiveness. A positive national image is an essential ingredient for promotion that raises the issue for necessity of investing into national branding as part of the image-building strategy.

Keywords: Environment; Image; Promotion; Brand; Green tourism.

ECONOMIC GROWTH AS A FACTOR OF SUSTAINABLE ECONOMIC DEVELOPMENT – CASE OF REPUBLIC OF KOSOVO

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ABSTRACT

The essence of sustainable development is the sustainable bond between the human and natural activities of the world, which does not diminish prospects for future generations to enjoy a qualitative life at least as it is today. The idea of sustainable development is not new. Many cultures along the course of human history have recognized the need for harmony between the environment, society and the economy, which is also the main goal for development. The main measure of sustainable economic development is the economic growth, expressed by GDP (Gross Domestic Product). Economic growth is the crucial module for a country's prosperity and helps to strengthen the living standards of citizens. It is acknowledged that a persistent and dynamic growth of GDP over a long period of time represents economic development.

Analysis from the economic growth of Kosovo as a transition economy characterized by low levels of foreign direct investment, high unemployment, underlying poverty, low quality of education, unsustainable business climate and the environment pollution, will be underlined in this paper. This study aims to empirically analyze all these variables, in order to understand their impact on sustainable development. The econometric measurements developed with linear regression by the small squares method (OLS) resulted in significant statistical conclusions of the variables, which provided the basis for the hypothesis verification; foreign direct investment has a positive impact on economic growth; Unemployment and poverty have a negative impact on economic growth. It is an interesting result of the impact of the degree of education that has resulted to be negative, as well as the climate of doing business. While the impact of environmental pollution is positive.

Keywords: sustainable development, economic growth, foreign direct investment, unemployment, poverty, education, doing business, carbon dioxide.

SUSTAINABLE DEVELOPMENT OF ROAD TRANSPORT THROUGH INTRODUCTION OF ELECTRIC VEHICLES – INITIAL STUDY FOR DEVELOPING REGIONS

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Abstract

Sustainable transport development is one of the key segments of a global sustainable development. The integration of electric vehicles in the road transport is widely expected to have a big potential in the same segment. On another hand number of aspects makes this process complex. The paper proposed contains a scientific based research in which main indicators are identified and analysis tool based on the AHP (analytic hierarchy process) method is used. The research is based on deep literature analysis related to the state of the art globally, and additional analysis done by science based research tool which could deal with the complexity of the task. The indicators reorganized fall into three main columns of sustainable development: Economy, Society and Environment. In addition a detailed transport data has been collected for Republic of Macedonia and the region. The results obtained through described research activities are shown through appropriate tables and diagrams. These results are first scientific based information which could help institutions, companies and personals, when facing challenges regarding decisions on policy making level, business and other levels. The paper could contribute for further analysis of the influence this process could have on sustainable development in the region as a whole.

Key words: sustainable road transport development, electric vehicles, AHP method

Implementing HOS, Challenges and Opportunities: Evidence from Tirana

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Abstract

Technology moves with rapid paces and it has also touched the industry of hospitality. The hospitality industry is a lively setting in a regular state of motion and progress. Nowadays this huge industry is facing several technological changes. In the case of the hospitality industry, technology should propose either value and/or comfort to the customer, or reduced cost to the hotel owner. With the continuing growth regarding social media, smart phones and tablets in the everyday life, the implementation of their technology in the hospitality industry proves to be a significant factor for customer satisfaction. The main focus of this research will be on the hospitality industry of the capital city of Albania, Tirana. There has been uploaded an application in the app store for a few months now created by an Albanian company named Softmogul, which is a hospitality operating sysyem, very simple and user friendly that allows small and medium hotel owners to manage their hotels with no desk on the go. By conducting a questionnaire to a considerate number of hotel owners and managers in Tirana, specifically 75, the current research investigates whether the hotel owners/managers are ready to implement this application as a revolutionary step in the hospitality industry or not. After the conduction of the questionnaire and the data analysis, it can be understood that the majority of the hotels (82,6%) were willing to implement the new technology in order to simplify all the duties of the owner/manager and which in the mean time will deliver more satisfaction to the customers of the hotels.

Keywords: HOS, Hospitality Industry, Hotels, Opportunities, Tirana.

SESSION II

Ecology and spatial planning

- 1) Regional aspects of environmental protection
- 2) Environmental pollution
- 3) Waste management
- 4) Environment and human health
- 5) Bio products
- 6) Water
- 7) Natural parks
- 8) Spatial planning etc.

ANALYSIS OF AIR MICROORGANISMS IN THE MATURATION AND STORAGE STAGES OF WHITE CHEESE

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Abstract

The main purpose of this paper is research and analysis of air microorganisms in white cheese, in two stages of production: maturation and storage. During the research stage, we get to know various factors that affect the air microorganisms of the product, and then adequate mechanisms that reduce the presence of harmful microorganisms in white cheese.

The methods used in this paper are analytical method and the comparative one based on the phenomenon of "microbial precipitation", respectively the free fall of microorganisms in Petri dish, which contain nutrient media. This method includes: Preparation of nutritional sites, setting of nutritional sites on Petri dish, opening of hosts for sampling, closing of dishes, incubation and reading of results. The analyzed samples are taken from two locations: Mitrovica and Fushë Kosovë, and include cheese residences such as dairy, market and shopping.

To conclude that the air microflora in white cheese lies within or outside the permitted levels this is verified by comparing the results obtained with the levels provided by the ISO standards. During the paper we will try to answer the questions: What are the main factors affecting the white cheese contamination, which microorganisms of fungal contamination have localized, how dangerous is the presence of these microorganisms in the product and what are the recommendations to avoid contamination of white cheese by air microorganisms.

As a result of recognizing and avoiding these contaminations, obviously we will achieve a safety of cheese but also all other products that are inseparable from our tables, and thus the health of the consumer in the near future will be much more safe.

Key words: White cheese, Air microorganisms, Microbial precipitation, Maturation, Storage, ISO Standards.

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The roots of the Macedonia-Greece conflict and the Great Power Policy according to British documents

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Abstract

The Roots of the Macedonia – Greece conflict and its complexity can be more clearly seen at the London Archives documents, which present the real situation on the ground and in international politics in the post-World War II period. The Allies' dilemma to seek another alternative to Macedonia's status, except what Tito had set in 1943 in Jajce, that is, the option of full independence, the territorial affair, and the complications that might arise between the Great Powers.

English diplomacy analyzes all the options of Macedonia's status, where Russia would respond to independence, while the British did not. According to the British, the weakening of Greece also means the weakening of British influence. Also interesting are the reports sent to the Foreign Office which provide secret information for: the Macedonian population, Bulgarian influence, the influence of the Communist Party, Leftism amongs Macedonians and so on.

Reports from the field say that “the Slavic population in Greece does not feel either Bulgarian, Serbian, but Macedonian, while the Greeks have shown little wisdom and now they call themselves as Slavic Macedonians.”

Rrënjët e konfliktit Maqedoni – Greqi dhe kompleksiteti i tij mund të shihet më qartë në dokumentat e Arkivit të Londrës, të cilat paraqesin situatën reale në terren dhe në politikën ndërkombëtare në periudhën e pas Luftës së Dytë Botërore. Dilema e Aleatëve për të kërkuar një alternativë tjetër për statusin e Maqedonisë, përveç asaj që Tito kishte vendosur në vitin 1943 në Jajce, dmth, opcioni i pavarësisë së plotë, çështja territoriale dhe komplikimet që mund të lindin në mes të Fuqive të Mëdha.

Diplomacia angleze analizon të gjitha opsionet e statusit të Maqedonisë, ku Rusisë do ti përgjigjej pavarësia, ndërsa britanezëve jo. Sipas anglezeve dobësimi i Greqisë nënkupton edhe dobësimin e ndikimit britanez. Mjaft me interes janë edhe raportet që dërgohen në Foreign Office të cilat japin informacione me karakter sekret për: popullatën maqedone, ndikimin bullgar, ndikimin e Partisë Komuniste, etj.

A longitudinal study of psychological stress and salivary cortisol in healthy young adults

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Abstract

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Psychological stress leads to activation of the hypothalamic-pituitary-adrenal (HPA axis) axis. Salivary cortisol, the end product of HPA-axis may be used as a biomarker of stress. We studied the association between perceived stress, coping styles, optimism and salivary cortisol in healthy young adults.

Methods: A prospective longitudinal study. Salivary cortisol was measured in 148 university students (mean age 20.4 ± 3.4 , Male 28.4%, Female 71.6%) at three time points (T1, T2 and T3) over a period of six months. The Perceived Stress Scale 10 (PSS10), Brief Cope Scale and Life Orientation Test (LOT- R) were used to assess the perceived stress, coping and optimism, respectively.

Results. Salivary cortisol concentrations ($\mu\text{g/dL}$) (log transformed), T1: (-0.856 ± 0.267) , T2: (-0.854 ± 0.245) and T3: (-0.857 ± 0.222) did not change significantly across the three time points, $F(2,248) = 0.011$, $p = 0.98$. Levels of perceived stress were high, however not significantly different over time. A backward multiple regression analysis predicting cortisol levels from perceived stress, distress, salivary flow rate, salivary pH, gender, smoking, level of physical activity and coping styles revealed that humor, venting, self-destruction and gender were significant predictors of cortisol concentrations at T1: $F(5,142) = 5.420$, $p < 0.001$; perceived stress, support seeking, humor, self-destruction, optimism and substance use significantly predict salivary cortisol at (T2), $F(6,140) = 3.477$, $p < 0.05$; at T3, salivary cortisol was statistically significantly predicted by optimism, stress, support seeking, humor, saliva flow rate, gender, doing moderate physical activity and being an occasional smoker, $F(8,133) = 6.517$, $p < 0.001$.

Conclusion: Our findings reveal that more use of dysfunctional coping and emotional coping strategies was associated with higher cortisol levels. The predictive role of the perceived stress and coping on cortisol levels was influenced by optimism as protective personality trait.

Keywords: salivary cortisol, perceived stress, coping, optimism, young adults.

Detection of Salmonella in eggs

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Abstract

The purpose of this review paper is to describe improved test methods for estimating the extent of *Salmonella* contamination on an egg, in order to assist in the control and elimination of this food infection hazard. *Salmonella* a member of the bacterial family *Enterobacteriaceae* may be recovered from foods and processing facilities. *Salmonella* has been recognized as an important zoonotic pathogen of economic significance in animals and humans. The egg's contents are an ideal growth medium for microorganisms that are hazardous to humans. A variety of methods have been developed in order to expedite the detection of *Salmonella* in eggs, including Gene Quence DNA hybridization, PCR analysis, and enzyme-linked immunosorbent assay. Also, brilliant green agar was found to support more growth of all the types of *Salmonella* studied, while bismuth sulfite was found to be inhibitory to *S. typhimurium*, *S. anatis*, *S. Worthington* and *S. oranienburg*. In each mentioned article of this review, different methods are used for detection of *Salmonella* on an egg.

Keyword: *Salmonella*, egg, yolk and albumen of eggs, PCR, DNA microarray, agar.

Occupational Safety and Health at Work as a Part of Sustainable Development Agenda

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Abstract

This paper examines the available data concerning non-fatal and fatal accidents at work in the Republic of Macedonia and the role that occupational safety and health plays in the sustainable development agenda of the country.

The main statistical indicators obtained from European Statistics on Accidents at Work as well as annual reports of Macedonian Occupational Safety and Health Association for the period 2010-2016, were analyzed. According to the National classification of activities, 'Public administration, Police and Defense', 'Households as employers by their own needs and agriculture activities' and 'the Construction sector', are counted as the most risky occupational sectors. Disappointing is the fact that out of a total of 898 accidents at work and injuries that had happened in the past period in all sectors together, 261 or 29.06 % were fatal. Most accidents in this period (293 out of 898), had happened in the sector 'Public administration, Police and Defense' out of which 18 or 6.14% were fatal, but the greatest number of accidents with fatal outcome, even 92 out of a total of 152 or 60.53%, were in the sector 'Households as employers by their own needs and agriculture activities'.

Today, the changing nature of the world, corporate structures, marketing strategies and modern production processes, pose more occupational safety and health issues. Whereas previous sustainable development concepts have concentrated strictly on the environment and green technology, now, the costs of occupational safety and health diseases and hazards must be considered. Social and economic benefits of better health and safety at work have to be the main objectives of stronger national strategy in a good Occupational Safety and Health management that will lead to benefit from many practices like reducing healthcare costs, sickness absence, and improving working methods and technologies.

Keywords: accidents at work; occupational safety and health; sustainable development

VOLUMES CALCULATION BASED ON DIGITAL TERRAIN MODEL; CASE STUDY: KELMEND TAILINGS

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Abstract

The main goal of this paper is to provide the result of calculating the volumes in the Kelmend tailings using the appropriate methods applying nowadays. Before reach to the result, should be developed the Digital Terrain Model (DTM in the further text) which should be used as the reference surface for fulfill calculating of volumes. Therefore, this process depends from input data respectively from the method of collecting data in the field and its processing.

In order to achieve the intention of the paper are developed the DTM of Kelmend tailings with known methods: TIN and GRID. After this will be continued the calculating of volumes in the tailings supporting from TIN, GRID and profiles method. As well volumes will be calculated by three methods known as: Average End Area, Prismoidal and Composite Volume. Results of the volumes based on methods abovementioned will be compared and interpreted because it worth to have clear results of each method.

Nowadays exists many computer softwares that have rich methodology and supports different methods of developing DTM and calculating volumes. Whole of methods abovementioned are applied in the study area named Kelmend, a place where are located mineral tailings of Trepca mine.

Results performed on the paper could be easily compared based on the method used for calculating volumes. As well during the paper we will try to answer on the question: Which may be the most appropriate method for developing DTM and calculating volumes of Kelmend tailings?

Such calculations could be done monthly or yearly in order to have realistic overview of Kelmend tailings.

Keywords: DTM, TIN, GRID, Profile method, Kelmend, Volumes.

The concentration of heavy metals in water of river Lepenci in Kosovo

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Abstract

The discharge of polluted waters from industry, agricultural flows and municipal waste waters in rivers causes the change of natural conditions of the rivers. River Lepenci basin flows in South East part of Kosovo, it discharges in river Vardar in Macedonia that belongs to Aegean Sea basin. During its flow, the river Lepenci basin covers the municipality of Ferizaj and Kacanik, where receives the main effluents. In this paper we present the results of analyses of concentration of heavy metals: Cu, Pb, Cd, Zn, Mn, Ni, Cr and Fe in water of River Lepenci. The water samples were taken in eight localities along the river course. Based on the results, the water quality of river Lepenci varies along its course, in upper stream the quality is very good, whereas in the middle and down stream it decreases due to many effluents it receives from untreated industrial waters, agricultural flow and waste waters from the municipalities of Ferizaj and Kacanik. Based on the values of heavy metal concentration in water in Lepenci river, these waters in many parts of the river do not qualify for class I quality.

Keywords: *Heavy metals, monitoring, water quality, river Lepenci.*

Water quality Monitoring of Lepenci river based on heavy metals

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Abstract

Water pollution in our country is very concerning and at alarming levels. Therefore the main purpose of this work is establishment of a monitoring network in the Latency river pond. The Lepenci river waters pour into river Vardar. In this material we will introduce results of massive concentration of heavy metals: Cu, Pb, Cd, Zn, Mn, Ni, Cr, Fe. The samples were obtained in 8 sample locations along the entire Lepenci pond. Based on the results, the water quality in its flow changes, one of the sources has good quality, in other points there is pollution that results from unprocessed industrial polluted waters and the sewage that discharge into the river. The pollution also comes from agricultural land spill. Relying on the chemical analysis data these waters in many parts of the river pond do not qualify for class I quality. Changes to the situation begin along the residence locations that discharge the polluted organic waters, and waters from industrial collectors, that are located along the river pond.

Keywords: *Heavy metals, monitoring, water quality, river Lepenci.*

The Aarhus Convention in the Macedonian legal order – the need for a greater “bite”

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Abstract

The paper examines the legal status and effect given to the Convention on access to information, public participation in decision-making and access to justice in environmental matters (Aarhus Convention) in the Macedonian legal order. As a multilateral international legal instrument, the Aarhus Convention has been ratified by the Republic of Macedonia in 1999, followed by the adoption of national laws that have served to codify the principles and obligations set out in the Convention. Furthermore, as a result of its pre-accession legal harmonization obligations with the EU, Macedonia was equally required to comply with the relevant EU directives that deal with the identical subject matter and serve to transpose the Aarhus Convention rules into the EU legal order. Thus, the Aarhus Convention obligations incorporated in the Macedonian legal order that guarantee an increased involvement of the public in matters that concern environmental protection, stem from three distinct legal sources: domestic, EU, and international. This on its own creates certain legal complexities and confluences which are especially notable in the phase of implementation of the Aarhus Convention obligations.

The aim of the paper is to detect the pattern(s) in which these inconsistencies in the implementation of the Aarhus Convention obligations arise by using a case study on the local referenda organized in the past months in several municipalities in the southeast part of Macedonia (Dojran, Gevgelija, Valandovo), related to the start of a few ambitious mining projects in the region. Based on the (thus far) unsatisfactory response provided by the relevant central and local governmental bodies as to the results of these referenda, the goal of the paper is to argue the need to introduce additional legal mechanisms that would enhance the level of stringency for non-compliance by the national authorities with their Aarhus Convention obligations and ensure that these obligations are fully respected by the parties involved. Reinforcing the Macedonian legal regime in the way suggested would give the former obligations more “teeth” as concerns potentially environmentally harmful projects and afford the domestic environmental protection legislation a greater “bite” when it comes to these issues.

Branched-Chain Amino Acids: Metabolic Role in Human's Body

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Abstract

Amino acids in general are compounds that contain amine ($-\text{NH}_2$) and carboxyl group ($-\text{COOH}$) along with a side chain ($-\text{R}$) which stands for radicals and it is specific for each amino acid compound. Aliphatic side-chains with a branch are present in branched-chain amino acids (BCAA) which have a central carbon atom bound to minimum three or more carbon atoms. Leucine, isoleucine, and valine are the most common branched-chain amino acids. The reason these branched-chain amino acids are called BCAA is because their own chain is created as a result of branch off from the other five essential amino acids. Their function is more important than simple nutrition. Different kinds of diseases are caused with protein loss, especially muscle protein. Improving disease conditions can be done with the supplementation of branched-chain amino acids. Every kind of the amino acids that form the BCAA chain can be taken as supplement for every person, they do their best work for the body while being taken together. In general, amino acids should take based on the special diet of the person and also of its deficiency. The importance of good balance is for the health because the body can throw off the BCAA creating serious side effects in the metabolic process.

Keywords: leucine, isoleucine, valine, BCAA

SPATIAL PLANNING AND INFORMAL BUILDINGS IN MACEDONIA

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ABSTRACT

Spatial planning is one of the key factors for a relatively adequate living environment because its policies regulate our access to housing, schools, industry, public institutions, meaning that spatial planning regulates and determines our way and quality of living. Regarding this issue in the Republic of Macedonia there has been a lack of awareness and caution from public opinion same as from the authorities that has resulted in a massive number of illegally built objects. These objects have been built contrary to the law meaning that the investors have freely chosen where to locate their buildings in the given space, especially in rural areas. The decision of the government to regulate the status of illegally built objects through the special law (Law for Legalization of illegally built objects) resulted in limiting the ability of spatial planning that the standards of urban planning require. In these environments the already illegally built objects suggestively predetermined the arrangement of spatial planning. In urban areas the concept of illegally built objects is unacceptable for its physical and visual obstruction, that is why a solution to such cases for buildings that affect spatial planning in Macedonia is inevitable in the near future. There have been presented a number of solutions such as the Uzun-Cete model that is quite promising regarding this issue.

Keywords: *spatial planning, informal buildings, law, environment.*

Heavy Metal Pollution of Batllava Lake from Drazhnja area (Kosovo)

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Abstract

Because the lack of wastewater treatment plants, all Kosovo lakes are exposed to high level of pollution from urban wastewater as well as from industrial pollution. Batllava Lake drains waters of northern and southern slopes of DRAZH NJA mountains. The hilly area which divides Kosovo Valley with Drazhnja area. The average flow of Batllava Lake from Hertica River is $0.25 \text{ m}^3 / \text{sec}$.

From the scientific point of view, the objective of this research was determination of heavy metal concentrations in the water of Batllava Lake. Heavy metal pollution may cause serious consequences for living organisms in the flow of the rivers, flora fauna and the population living along the river. The research included measurement of heavy metals concentration: Iron (Fe), Nickel (Ni), Lead (Pb), Manganese (Mn), Zinc (Zn), and Copper (Cu). Samples were taken in 6 sampling sites from surface water and 3 underground water, and analyzed in the laboratories of the ALS Chemex in Romania and Kosovo institute – Inkos sh.a.

Other physical and chemical parameters were measured as well. Atomic Absorption spectrometry was the methodology used to determine the concentration of heavy metals.

Results of the measurements showed that the water quality of the Batllava Lake is of a poor quality, primarily due to the human activity impacts, such as wastewaters discharged into the lake, urban pollution, industrial and agriculture pollution.

Keywords: *water, river, heavy metals, analysis.*

IMPORTANCE AND USAGE OF SPATIAL DATA INFRASTRUCTURES IN TECHNICAL SCIENCES

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ABSTRACT

As one of the most important aspects of global is fully recognition of the environment from micro-regional up to national, regional and global level. Right management with environment has direct impact on society developing, which also means direct impact on human life.

The general principle for casting of responsibilities between the state relevant institutions in a field of spatial data, are the principles of multi-usable official data and no-duplicate the same data by two or more institutions. Those principles can be realized by utilization of the latest GIS technology, based on integrating the information and communication technology, the real needs and on day situation, as three main components for developing Spatial Data Infrastructures (SDI's) of all levels, from sub-national (local) up to global level. Those are the basics of more rentable utilization of spatial data, i.e. rentable functioning of whole national system.

Spatial Data Infrastructure (SDI) encompass policies, institutional framework, organizational guides, data, technologies, standards, delivery mechanisms, as well financial and human resources, to acquire, process, store, distribute, improve utilization, than to increase access, availability, and sharing georeferenced spatial data, and to realize and foster services for citizens.

Nowadays, almost every country develops its own SDI's in a various levels, from local up to national, with aim to incorporate them in international level. Most important aspect during developing of SDI's is the fully recognition of micro regional data from one side, and the regional, national and/or international needs-standards from the other side. Based on the level of included data and covered area, the hierarchy of SDI's can be categorized as Global Spatial Data Infrastructure (GSDI); Regional Spatial Data Infrastructure (RSDI); National Spatial Data Infrastructure (NSDI); State or Provincial Spatial Data Infrastructure (SSDI); Local Spatial Data Infrastructure (LSDI); and Corporate Spatial Data Infrastructure (CSDI).

Keywords: SDI, spatial data, GIS, GeoPortal.

GEOSPATIAL ANALYSES FOR SCREENING OF SUITABLE LOCATIONS FOR RENEWABLE ENERGY SOURCES

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ABSTRACT

The renewable energy resources, that are easily accessible in rural areas are mostly unused. They are very important segment of the human life in modern world, which provides energy for electricity generation, air and water heating/cooling, transportation, and off-grid energy services, that is collected from renewable resources which are naturally replenished on a human timescale such as sunlight, wind, rain, tides, waves, and geothermal heat.

The main goal of this paper is to show the contemporary GIS-based approach for geospatial analyses of suitable locations for exploitation of renewable sources of energy no matter of whether it is going for hydro power of small streams, wind or solar power. The focus of interest is set to the analysis of some most important topographic land surface parameters such as: slope (gradient of surface), aspect of slope, as well as the shading analysis and other land surface parameters that are important for optimal decision making concerning the suitable locations for renewable energy exploitation.

The methodology and analysis is performed on a study area which encompasses a part of the northeastern watershed of Prespa lake for hydro and solar energies, while the analyses for wind energy have been performed for entire country area. Throughout the researches it is showed, that the DEM (Digital Elevation Model) is one of primary driving force for analyzing of physical processes of surface resources. In the paper is proposed a methodology for assessment of hydropower potential of small streams as one of the oldest renewable energy resources, solar power plants and wind farms.

Results of performed analyses show, that the analyzed areas have considerable potential for use of renewable energy. The proposed GIS based approach for spatial analysis of suitable locations can be modified and applied to any other spatial location!

Key words: GIS, Wind farms, Hydropower, Solar power, GeoProcessing.

ONLINE MONITORING SYSTEMS WITH AUTOMATION OF GEODETIC METHODS FOR THE PREVENTION OF ECOLOGICAL DISASTERS

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ABSTRACT

Deformation measurements of large civil engineering structures and natural phenomena are key competences of engineering geodesy. Geodetic monitoring systems in present days exhibit an extremely high level of automation. Overall solutions can be efficiently customized toward the individual demands of the object monitoring. A variety of geodetic and geotechnical measuring sensors are available for the determination of geometrical changes within the object monitored. A technical structure or a ground level surface can be analyzed through the precise measurements done by automation monitoring systems. This article addresses the efficiency and performance of the monitoring systems with geodetic measuring instruments. Global climate changes, population growth and the successive expansion of land use area lead to a conflict between land use and prevention of natural hazards, such as slopes or thawing permafrost zones. This conflict can also be referred to generally critical areas, like regions with volcano activities or earthquakes. Geodetic geo-monitoring starts with the storage of original measurements and ends with reporting or in cases of emergency with alarming of the competent people. Completely automated, online monitoring systems can also help reduce overall cost. Geodetic monitoring of engineering buildings is needed to prevent and protect our lives and nature from disasters.

Key words: online monitoring, measurements, prevention, deformations.

A comparative study of edible oil upon thermal treatment by FTIR using a mesh "cell"

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Abstract

The present study investigated the thermal stability of the two marketed types of edible oil using FTIR Spectroscopy and to detect the changes occurred in quality of olive oil (OO), sunflower oil (SFO) as effect of convective heating for 1, 6, 12 and 24 h under frying procedures. The changes reported in the spectral region 400-4000 cm⁻¹ after heating at elevated temperature aid to the monitoring of oxidation process.

Despite the moderate conditions applied, mesh cell-FTIR spectra have revealed the formation of hydroperoxides and the subsequent formation of alcohols and aldehydes. Mesh cell is a rapid tool designed to monitor chemical changes that occurs as a consequence of oxidation at moderate conditions. In this study mesh cell accessory has been proposed for assessing oil stability by Fourier transform infrared (FTIR) spectroscopy. The results therefore indicated the method to be as effective as standard methods and others in predicting edible oil oxidation. In conclusion, applying the mesh cell based FTIR method for monitoring the process of oxidative degradation occurred in edible oils subjected to heating at high temperature is feasible.

Keywords: sunflower oil, olive oil, FTIR Spectroscopy, mesh cell

Compounds in Fermented Milk Products

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Abstract

In general, there are more than one hundred chemical compounds such as carbonyl compounds, primary and secondary alcohols, esters and aromatic hydrocarbons which are isolated from the milk products, but only few of them diacetyl, acetoin, and acetaldehyde directly influence to flavor of dairy products. The concentration of these volatile compounds changes during time. The storage conditions influence on the presence of these compounds and it is expected at higher temperatures their presence to be reduced. The synthesis of the compounds which are responsible for the aroma and flavor is according to the metabolic paths in which a large number of bacteria take part in it.

The importance for the determination of the concentration of these compounds is based on the safe in their usage not only because they should be with the declared one, but also their determination is important from the health point of view. There are many different kinds of fermented milk products from sour cream, yoghurt, sour milk to kajmak and the main compound for the flavor is diacetyl.

The goal of this work was to develop method for rapid determination of flavor compounds based on the Westerfeld's reaction using creatine and 1-naphthol in alkaline medium (NaOH) with UV-Vis spectrophotometric method.

Keywords: diacetyl, fermented milk products, UV-Vis spectrophotometric method

Design and installation of waste water treatment plant in tobacco processing factory - significant step towards sustainable development

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Abstract

This paper represents case-study from the designing, construction and installation of industrial Waste Water Treatment Plant (WWTP) in tobacco processing factory in the Republic of Macedonia. The factory referred to in this article only processes recently harvested tobacco, creating a product that can be stored until it is needed for production of cigarettes, cigars and smokeless tobacco. This stemming and redrying facility is considered the "middle man" between tobacco farmers and manufacturers. The process itself results in little to no wastewater discharge from stemming and redrying operations. Components from production wastewater are neutralized and biologically degraded and after that are homogenized by fecal waters from the sanitary nodes. The load of WWTP is calculated as 'population equivalent'. Population equivalent or unit per capita loading, (PE), in wastewater treatment is the number expressing the ratio of the sum of the pollution load produced during 24 hours by industrial facilities and services to the individual pollution load in household sewage produced by one person in the same time. Principle of operation and short description of WWTP elements are also presented in the article. Following legal obligations regarding waste water treatment and quality of waste water at discharge from industry, installation of such facilities leads not only to environment protection but also significantly contributes to sustainability of the environment protection and sustainable development of the country in general.

Keywords: waste water treatment, environment protection, sustainability.

Constitutional Parts in the Red Hot Chilli Pepper

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Abstract

In general, the red hot pepper is made up of many compounds such as: carbohydrates, proteins, carboxylic acids, minerals and vitamins, carotenoids and capsaicinoids. The constitutional parts of the red hot chilli pepper are pericarp, placenta, seed and stalk. The greatest quantity of coloured substances, expressed as capsanthin content was found in pericarp. In the production process of red hot chilli pepper, placenta, seed and stalk are designated as waste.

The determined values of bioactive substances in stalk, seed, and placenta showed that they are promising sources of valuable raw materials in the production of some kinds of product from food and pharmaceutical industry. The main substance in the red hot chilli peppers comes from capsaicin, which acts on the pain receptors in the mouth. Capsaicin is found in large quantities in the pepper membrane, giving the "heating" effects. It influences in lowering cholesterol content in the blood and triglycerides, and also it influences in increasing immunity. This substance has profound effects on stimulating the production of thyroid hormones, and also on the production of adrenaline and dopamine, and the hormones that regulate appetite. The aim of this paper is to predict the behavior of different kinds of red hot chilli peppers on Scoville scale.

Keywords: nutritive compounds, red hot pepper, phenolic compounds

Air quality assessment in Pristina during the period January - June 2017

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Abstract

The paper describes the complex problems concerning air quality in the Pristina city. Air pollution in a modern city has become a serious environmental problem, because of the combined effects of various pollutants upon the physical and mental health of citizens and the quality of urban life in general. Today, the largest source of pollution in urban areas is the of transportation, and to a lesser extent industry and household traffic generated pollutants include nitrogen oxides, carbon monoxide, and particulates.

In this research we made the assessment air quality in the municipality of Pristina for the first half an year 2017. Air quality measurement of NO_x, SO₂, CO, O₃ and particulates concentrations has been done in Pristina, by Kosovo Hydro meteorological Institute.

Keywords: Air quality, various pollutants, pollution, Pristina.

Determination of Physical and Chemical Parameters in the Drenica River

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Abstract

Because the lack of wastewater treatment plants, all Kosovo rivers are exposed to high level of pollution from urban wastewater as well as from industrial pollution.

Drenica River is the largest branch of the left side of Sitnica River (47.6 km), with a surface of 446.4 km². The average flow of the river Drenica in Sitnica is 2.0m³/s.

This paper is aimed at researching the level of water pollution in Drenica River with heavy metals and other effluents. From the scientific point of view the objective of this research was determination of heavy metal concentrations in the water of the Drenica River.

The research included measurement of concentration of heavy metals: Iron (Fe), Nickel (Ni), Chromium (Cr), Lead (Pb), Cadmium (Cd), Manganese (Mn), Zinc (Zn), and Copper (Cu) and other chemical and physical pollutants. Samples were taken in 12 sampling site, and analyzed in the laboratories of the Kosovo Hydro-Meteorological Institute. In order to increase the accuracy of the results, samples were taken in both summer (dry) and autumn (wet) seasons. Atomic Absorption spectrometry was the methodology used to determine the concentration of the heavy metals.

Results of the measurements showed that the water quality of the Drenica River is of a poor quality, primarily due to the human activity impacts, such as wastewaters discharged into the rivers, urban pollution, industrial and agriculture pollution.

Keywords: *water, river, heavy metals, analysis.*

SUITABLE HUMAN BIOMARKERS FOR BIOMONITORING OF ENVIRONMENTAL POLLUTION

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Abstract

There are many different types of pollutants released to environment in every moment by the human activity which classified in five categories: inorganic and organic pollutants, organo-metalic compounds, radioactive isotopes and gases. These toxic elements enter different ecosystems easily and their effects remain for a long period of time. In occupational health, biomonitoring deals with the systematic or repetitive measurement of chemical or biochemical markers in fluids, tissues, or other accessible samples from people exposed to or with past exposure to chemicals risk factors. Depending on their toxicological significance, biomarkers have been classified in three main categories: biomarkers of exposure, biomarkers of effect, and biomarkers of susceptibility. As a result of this biomonitoring, they are considered as important tools for investigating mechanisms behind exposure-induced adverse health effects. For that point of view, genotoxicological assays as micronucleus assay, comet assay, and sister chromatid exchange (SCE) are very important test in ecotoxicology in general. The result of this assay indicated a direct relation between increase of pollution and changes in the cells. For that reasons the determination of their abnormality can be suggested as a specific biomarker of exposure for biomonitoring of pollution within an ecosystem and also could be useful point in ecotoxicological studies.

SESSION III

Education and Science

- 1) Human capital and sustainable development
- 2) Pre-university education
- 3) Education, research and innovation
- 4) Regional co-operation in education
- 5) Brain Drain
- 6) Social engineering and its impact on international sustainable/unsustainable development
- 7) EU's approach towards regional sustainable development
- 8) Media in support to sustainable development
- 9) European integrations and mobility

Using Excel to predict and compare the grade in Mathematics by simplelinear regression model

Zoran Trifunov

Teuta Jusufi Zenku

Elena Karamazova

Abstract

In this paper was used simple linear regression model to predict and compare the final grade of the students in subject of Mathematics from department of Technical Sciences. Data's were collected from students of two Universities:University "Mother Teresa" in Skopje and University "Goce Delcev" – Stip. The model was based on the data of students' scores in three tests: 1st periodical exam, 2nd periodical exam and final examination. This analyze was carried out by simple linear regression model. For obtaining our results was used Excel. In this paper also have been given the graphical representations of ours analysis and in the end have been given some conclusions based on the results.

Keywords: Simple linear regression, multiple linear regression, Excel, graphs.

RESULTS ON COMMUTATIVE NEUTRIX CONVOLUTION PRODUCT USING ERROR FUNCTION

Teuta Josufi Zenku

Biljana Jolevska - Tuneska

Zoran Trifunov

Abstract

In this paper are evaluated some commutative neutrix convolution product using error function $\operatorname{erf}(|x|^{1/2})$ and its associated functions.

At the first part of the paper was given the definition of error function (also known as Gaussian error function) $\operatorname{erf}(x)$ [18] for $x \in \mathbb{R}$ by

$$\operatorname{erf}(x) = \frac{2}{\sqrt{\pi}} \int_0^{\pi} e^{-u^2} du = \frac{2}{\sqrt{\pi}} \sum_{i=0}^{\infty} \frac{(-i)^i}{i! (2! + i)} x^{2i+1}$$

The error function is odd, convex on $(-\infty, 0]$, concave on $[0, -\infty)$, and strictly increasing on \mathbb{R} . Gaussian error function plays an important role in applied mathematics. That is why Dirschmid and Fischer extended the classical Gaussian error function $\operatorname{erf}(x)$ to a family of infinite extended Gaussian error functions $\operatorname{erf}_i(x)$ (for $i \geq 1$) which can be easily programmed by current computational tools.

Then was given definition of generalized error function, next the classical definition of the convolution of two locally summable functions f and g and extended definition of the convolution $f * g$ of two distributions f and g in D' , the space of infinitely functions with compact support.

Then was given the commutative neutrix convolution product of two functions. Finally, in the end were prove our main results.

Keywords: Gaussian error function, distribution, convolution product, commutative neutrix convolution product.

EDUCATION, SCIENCE and HUMAN CAPITAL AS FACTORS OF SUSTAINABLE DEVELOPMENT

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Abstract

Education and science determine the value and potential of human capital in society. The data show that in recent years all educational and learning policy indicators have deteriorated. Additionally, alongside socioeconomic factors, unfavorable influence has also exacerbated some regional and global phenomena. With these new trends, there is a need to create and improve indicators that measure these developments that can help identify challenges and problematic and areas.

This paper will present an analysis of socioeconomic, financial and demographic indicators influencing human capital, education and science as a prerequisite for sustainable development in society. By presenting the analysis of key indicators, this paper aims to direct the attention of academic research to address the need to improve research in this area and current policies related to these three development pillars.

Keywords: education, science, human capital, indicators, social development

“Euroscepticism. – What are the tendencies?”

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Abstract

One of the main reason for writing this paper is the discussion that is going on currently about the process of Brexit and the negotiation process that will set the rules on which UK will leave EU. The main hypothesis of this research is the importance of Euroscepticism and the factors why it has become a very serious issue of the future of EU. Few examples will be taken into consideration during this research. A brief analysis of the different types of euroscepticism on different countries - including the ones which are mostly facing it: Britain, Denmark and Greece- will be done. Another perspective of this project will be the presence of this phenomenon in a non-EU member as Macedonia. Results from polls and other statistical data will be provided to elaborate the main factors that cause and develop Euroscepticism. The paper concludes this phenomenon and its consequences, including the questioned status of the Republic of Macedonia in relation to the EU accession processes.

Keywords: Euroscepticism, EU, Brexit, Denmark, Grexit, Macedonia

Youth and Gender! - The Role of Psycho-Social Services in Gender Education in the Secondary Education System. “Case Study: Macedonia vs. Albania”

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ABSTRACT

As many other societies, influenced by the dynamics of change, the Albanian society has begun to understand and accept that the birth of a boy or a girl does not necessarily mean that they will further develop and grow to fulfill societal expectations. In this regard, acknowledging, rather than ignoring gender differences, is the only intellectually response to increase awareness about the phenomena. Said this, this article is an attempt to identify problems and compare the psychosocial service system and the way they deal with gender education in the high schools of Albania and Macedonia. The main objective is to find the similarities and discrepancies between two countries based on the individuals who offer these services in high schools and how do they contribute to the gender roles. How do they include gender in their working plans? What kind of activities do they organize in these terms and which are the areas that require further improvement? Is there any collaboration between them and the other actors involved in the education process etc. Based on a qualitative methodology and in-depth interviews with individuals working in high schools in Albania and Macedonia, this study proved that high school students perceive and perform gender based on their family lenses and models that often reflect the dominance and superiority of the masculine power. It was also clear that the individuals responsible for offering psychosocial services face numerous problems and challenges that are intensified due to the delicacy of gender as a paradigm, the low level of information and fragility of their age.

KEYWORDS: education, gender roles, psychosocial services

Innovations in Teaching

A Comparative Study of Foreign Language Education

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Abstract

This study is a statement for English language teachers that describes a comparative structure of English Language Teaching (ELT) among Portuguese and Kosovar Language Faculties in 2016/2017. It is an attempt to present the essentials of ELT in Portugal with all generalizations observed by a non-Portuguese researcher, and it aims to grasp the best of it and benefit to Kosovar and other educative systems. The researcher was personally and professionally integrated in this study that involved relatively the same study procedures in two countries in a period of six months by class observations in Portugal, and students' interviews in Kosovo. Firstly, there were those study procedures/classroom observations in Porto that identified how ELT activities could be adapted into better learning activities. Secondly, there were those study procedures relating to how the teachers and students participated in EL class in both faculties. Any comparison made in this study between teaching/learning English in Portugal and Kosovo took into account the differences the students have in both countries. And every comparison which takes into account the advantages of methods used in class compel EL teachers to carefully plan their teaching time for the purpose of better and easier English teaching and learning. This means the empowerment of students with knowledge in terms of skills and opportunities to use English as a solution to catalyze linguistic changes in language usage and enhance further English Language Learning (ELL).

Keywords: ELT, Skills, Teachers, Comparison, Enhancement.

Implementing New Approaches in Chemistry Teaching Methods

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Olga Popovska

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Abstract

The aim of this paper is to develop new methodological approaches in chemistry education. The use of pictures, photos, diagrams, molecular models, and other kind of visualizations tools has increased rapidly in the last years in chemistry education. In the comparison to the traditional teaching methods where the board was the main tool, nowadays learning is towards utilizing power point presentations in lessons and also learning the experimental part in the laboratory. The utilization of visual tools in chemistry education is required in terms to promote visualization capacities. Students can more easily create imaginations on relations between the macroscopic, microscopic, and theoretical aspect. Connections between the practical, graphic and numeric aspect from the point of required outputs prove the learning content. Taking into account today's laboratories have contemporary instruments and the teaching approaches should be developed in connections with visualization software packages. This is important in order to increase performance to the teachers and to make students to understand different topics in chemistry. The growing interest of educators in visual literacy is conditioned by the newly emerging communication and visualization technologies, which are supported by the development of computer graphics, animations, and simulations motion of the substances. The objective of this paper is to analyze these applications and evaluate them from the point of their further application in the chemistry instruction on the general knowledge of chemistry. The demonstration is not only applied to different concepts in chemistry education, but also to provide experience that allows students to provide their own data and conclusion. In this research, we tried to compare effects of visual and experimental work in laboratory towards students.

Keywords: chemistry, education, power point, software

Media's role in Macedonia in the process of transformation and democratization

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Doc. Dr. Avni AVDIU

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Abstract

This paper discusses the role of the media in the transition from one-party system to a pluralist system with particular attention and emphasis on the democratization of the country, its political system and society, as well as the role and function of the media in overcoming the challenges of transition into the democratization process of the country, its institutions and society, and the media themselves. This paper also attempts to analyze the multicultural discourse in Macedonia as a special political challenge, that is, nevertheless, an integral part of the media themselves and their programs. Given that the media can be considered as cultural objects, they also dictate the biggest changes in society such as identity, life itself and work. The media are a very important part of democratic values in a civil society. Their multicultural role and the “public – media” relation should not be underestimated.

Multicultural societies feature inter-ethnic cooperation, tolerance, compromise and inter-ethnic consensus. While the Media in Macedonia are the ruling party's instrument of control, any concrete steps of improvement in the development of media in Macedonia are almost impossible. Independence, substantially and financially, professionalism, social responsibility, freedom of expression and information are the keys to democratic values and free media.

Keywords: *Media, Democratization, Transition, Macedonia, Media Impact, Sustainability.*

PROTECTION FROM WORKPLACE HARASSMENT

Mr. LIRIDON ZENKU

Abstract

A concern in the workplace is any kind of negative behavior from an individual or group, that is repeated constantly and systematically which presents a threat to the dignity, to the prestige and the honor of the employees, and it causes a feel of fear and dissatisfaction, which all of this can cause an affection of the physical and mental health, termination of the workplace or the abandonment of the workplace.

Employers, workers and persons which are with agreement that participate in the employer's workplace, should respect the rules that the work has which includes the discipline, the general rules of behaviour by law for protection from the harassment in the workplace.

Employee or the person with an agreement, which takes part at work and considers himself concerned from the workplace, before filing the lawsuit to the court, can submit a written request for protection from harassment in the workplace, the employers and the employees which are not satisfied by the results of the procedure for protection from harassment in the workplace, then the employer can submit a claim to the competent court.

With all the the efforts made, by taking and exploring some of the informations about the protection from harassment in the workplace, and through precise definitions and illustrations, I treated the issues and the challenges of law for the rights of the workers and the protection of the workers.

Keywords: protection, workplace, concern, employee, employer

SESSION IV

Information and Communication Technologies

- 1) ICT Education for Sustainable Development
- 2) ICT skills and employability
- 3) Building up ICT capacities and networking
- 4) IT and Diaspora education
- 5) Use of ICT capabilities in Enhancing Education
- 6) Challenges in ICT and regional collaboration opportunities

SENTIMENT ANALYSIS FOR EDUCATIONAL EVALUATIONS

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Abstract:

Being widely used in many other disciplines, this paper explores the usage of sentiment analysis in education. Considering the importance of evaluations in academic institutions, which are integral part of the education system, we try to find out all potential uses of sentiment analysis during the process of conducting some types of evaluations, such as: course evaluation, lecturer evaluation, university rankings and other internal events evaluation.

Avoiding the “one-time” evaluations and surpassing the limitations of Likert scale scores, through sentiment analysis systems we can hear everything that students are saying, at any time.

The proposed model is based on supervised and semi-supervised learning methods, which as input will get the feedbacks from institutions’ online systems or social media. After processing all available data, at any time we may get the sentiment score for any subject and aspect.

The main contribution of this will be reflected in the teaching performance in educational institutions, because of the all-inclusive feedbacks, real-time results and higher accuracy of evaluations.

Keywords: *Educational evaluations, Sentiment Analysis, Teaching performance*

Smart Parking Implementation Based on Internet of Things

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Abstract

The Internet of Things is a technology trend that is independent communication between objects that help to optimize operations, reduce costs, boost productivity and improve lives. This work is an implementation of a complete system that will turn parking into a smart one, by using off-the-shelf hardware components and free easily available software. This system will enable more efficient and easier management of free parking spaces for the drivers and navigate them on a parking lot. It consists of Raspberry Pi device on the server side, and Android application for the users and Web application for the operator, on the client side. Raspberry Pi as a main controller, on one side is connected and operates with sensors and actuators through Arduino to monitor and control the parking lot, and on the other side via Web Socket is connected to the Android application that is a main controller for the end users. This system takes into consideration and offers solutions to many current issues in this area like high costs, time to find parking and efficiency. Implemented prototype of smart parking has scientific, market and also environmental value. The main benefit of the project is to offer parking optimization that provide efficient filled up of the parking lots, reduce management costs, save time and effort to find a parking spot. Also, it is environment-friendly, so it will reduce the driving time and decrease the vehicles' pollution and ultimately reduce the global ecological footprint.

Keywords: Smart Parking, Internet of Things, Raspberry Pi, Environmental Protection

A Big Data Analyses of Analytics Perspectives of Implementation in the Health System in Macedonia

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Abstract

The focus of the research study is to investigate and analyses the current big data issues in order to make sense of big data and use it to improve health. Within the investigation of published literature, based on the realized review concluded that bioinformatics is the primary field in which big data analytics are currently is being applied, largely due to the massive volume and complexity of bioinformatics data. The lack of a formal definition for Big Data has led research to evolve into multiple and inconsistent paths. Furthermore, the existing ambiguity among researchers and practitioners undermines an efficient development of the subject especially its potential to be used in medicine within the bioinformatics discipline. The current main challenge is to efficiently translate science into modern medicine that is limited by our capacity to process and understand these big data. So, there is an urgent need to develop and integrate new , mathematical, visualization, and computational models with the ability to analyze Big Data in order to retrieve useful information to aid clinicians in accurately diagnosing and treating patients to improve patient outcomes. Scientists and health-care providers may learn from one another when it comes to understanding the value of Big Data and analytics. Data, derived by patients and consumers, also requires analytics to become actionable. Insights and recommendations are provided, argumented and discussed.

Keywords: Keywords— big data, bioinformatics, machine learning, computational model

Analyses of ICT usage in School Management in Macedonia

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Majlinda Fetaji

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Abstract

The focus of the research study is to investigate and analyses the ICT usage in School Management. ICT in teaching has an important role and its impact on the advancement of educational processes related to effective teaching and learning, and modern research in this field is almost irreplaceable. Another important element is the use of different software platforms that facilitate learning visible and make it more concrete, more practical and applicable to everyday life. Of course, the use of ICT in teaching practices cannot be imagined without the continuous professional development of teachers, to increase competence in the use of ICT and global tracking technological innovation in the field of education. In order to analyze the data a combination of qualitative and quantitative methodology has been used. In order to collect the data a questionnaire has been used. Insights and recommendations are provided, argumented and discussed.

Keywords: ICT usage in schools, Management of education, evaluation of technology enhanced education

Operating System Virtualization in the Education of Computer Science Students

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Abstract

Virtualization is a way of simultaneously running multiple operating systems on a physical computer. Virtualization can run on virtually every machine, from embedded systems-on-chip, to large datacenters and cloud environments. Simple on its surface, virtualization taps into possibilities that would be either unavailable or too involved to obtain from unvirtualized hardware.

Virtualization brings multiple benefits to the table: Concurrent operation on non-native hardware; images of operating systems together with the associated data can be stored on networked systems and teleported; developers using virtualization can, at a fraction of the effort, develop a thorough grasp of the existing operating systems or work on their development, without the need to have all the diverse hardware actually deployed; the abundant computational power available today allows for real-time interaction with the virtual appliances; and the list goes on.

At present, virtualization is a ripe technique supported both in the major CPU designs and the necessary virtualization software, and is already an unextricable part of production environments. With that, computer virtualization ought to become an inextricable part of the computer science (CS) education as well. Together with the benefits of virtualization, there comes the burden of conquering this new technology by students, system administrators, and teachers at the tertiary level preparing the future CS experts. To be successful at these tasks, a wealth of information needs to be sifted through before selecting the right platforms for the computer science education and laboratory.

In this light, the aim of this paper is to provide a survey and analysis of virtualization and its applications, and trace the ways of its use in teaching of CS subjects as well as the equipping well-rounded CS laboratories with virtualization capabilities. The hope is that this survey will be of value to instructors, laboratory administrators as well as to advanced students undertaking a self-study of operating systems and their applications.

Keywords: *multiple operating systems; virtualization; datacenter; cloud; computer science education.*

Analyses of Impacting Factors and Issues in the use of ICT capabilities in Enhancing Education

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Abstract

Today, teaching and ICT are two strongly interrelated concepts, at all levels of education and in all subjects. Dependence created by ICT teaching can hardly be compensated in another form. Data from numerous global research proved that using ICT can help students to learn and teachers to manage information more effectively. However, this does not mean that ICT will make a difference, simply being used. Different findings have suggested that although ICT can improve learning, there are a number of issues that need to be considered if such technology will eventually make the difference. Therefore, care should be taken in this broad level, in where and how and what the impact level will be. There are several issues and impacting factors that need to be taken under consideration. First is the effect of "interrelated integration" of ICT compared with other interventions, the second is the effect of the provision and use of ICT at a general level. In order to analyze this, Case study analysis of use of ICT in Universities in Macedonia is realized. Insights and recommendations are provided.

Keywords: ICT impact on education, Management of education, evaluation of technology enhanced education

Sustainable Green Networking and Computing in 5G Systems: Technology, Economics & Deployment

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Abstract

Today the whole world is faced with economic and societal challenges such as ageing of populations, societal cohesion, sustainable development. In September 2015, the United Nations established new global sustainable development goals that will protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations. Achieving the sustainable development goals demands new technologies, innovations, and data collection that can integrate and complement traditional statistics. A driving force behind this data revolution is mobile technology. In this direction many research initiatives are currently working on the next 5th generation of mobile and wireless networks, known as 5G. One of the most critical challenges in the design and deployment of the 5G system is the development of green and sustainable networking and computing protocols that are capable of supporting the advocated 1000 times data rates and throughput with a reasonable and affordable energy consumption level. This paper explores the ways in which 5G network technology would enable public protection, resource management, and overall sustainability. Initially provides an overview of 5G network. Then it provides an information about the world major conservation and environmental challenges in terms of water and air quality, energy and transportation, and building design, and how 5G network would help people deal with these problems and would improve service delivery and further economic opportunity. Finally, it would be provided an information about 5G network deployment in Macedonia.

Keywords: 5G, Cloud Computing, Fog Computing, Mobile Cloud Computing, Mobile Edge Computing, Energy Efficiency, Sustainability

INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IMPLEMENTED IN SMART CARS

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Abstract

As technology advances, it has been envisaged that in the very near future, robotic systems will become part and parcel of our everyday lives. Even at the current stage of development, semi-autonomous or fully automated robots are already indispensable in a staggering number of applications. To bring forth a generation of truly autonomous and intelligent robotic systems that will meld effortlessly into human society involves research and development on several levels, from robot perception, to control and to abstract reasoning. When it comes to the smart car, Information and Communication Technologies (ICT) are enabling, for instance, advanced control and communication systems in smart cars which can also be used to control the powertrain, brakes and steering, as well as infotainment functions.

This paper presents a concept of the platoon movement of autonomous vehicles (smart cars). Such vehicles have an Adaptive or Advanced Cruise Control (ACC) system also called Intelligent Cruise Control (ICC) or Adaptive Intelligent Cruise Control (AICC). These vehicles are suitable to follow other vehicles for a desired distance and to be organized in platoons. A platoon formation is composed of a vehicle which assumes the platoon leader role (generally the human driven) and other vehicles which play the follower role. For the control of the vehicles with nonlinear dynamics a combination of feedforward control and feedback control approach is used. For simulation and analysis of the vehicle and the platoon of vehicles, Matlab/Simulink models are designed.

Keywords: *Platoon of vehicles, Smart car, Adaptive cruise control (ACC), Intelligent transportation system.*

Challenges of Educational Policy Design and Implementation in a Developing Society: Use of ICT in Enhancing Education

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Abstract

Public policy is an accelerator of the processes that have a direct impact on the design of the society, but the stability of society has a great impact on the process of implementation of given public policy(ies), too. One of the many benchmarks in the stage of progress of the Republic of Macedonia on its road towards the EU was the vision for implementation of Information and Communication Technology (ICT) in all social pillars, set by the Macedonian Government. The question we seek to answer is: does the country's stability represent a key factor for successful implementation of policies, taking into account the deep political crisis which started somewhere in 2012 and peaked in April 2017? We are taking ICT policies implementation as a micro case study. The Networked Readiness Index, introduced by the Information Technology Group at the Harvard University's Center for International Development, pursues to better understand the "impact of ICT on the competitiveness of nations". A country's overall NRI score is produced by combining subindex scores, which in turn are obtained by combining pillar scores. In a process of successive aggregations, the latter are obtained by aggregating individual indicators, about half of which are provided from international organizations. Starting from the available indicators in the World Economic Forum's Global Information Technology Report, and by following the methodology for calculation of the Chinese National Informatization Index Quantity, we propose a measure of the education informatization level in the Republic of Macedonia. The Republic of Macedonia is undergoing through a complex period where the implementation of policies is not on the appropriate level, which leads to the conclusion that "societal design" is underperforming.

Keywords: *public policy; government; ICT; informatization; educational policy; education informatization index*

