



CIRD
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3rd INTERNATIONAL CONFERENCE

Shaping the Future:

**Multidisciplinary Approaches to
Digitalization and Economic Growth**

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**BOOK *OF*
ABSTRACTS**

3rd International Conference on Intelligence Based Transformations of Technology and Business Trends (ICITBT)

**SHAPING THE FUTURE:
MULTIDISCIPLINARY APPROACHES TO DIGITALIZATION AND ECONOMIC GROWTH**

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**Honorable guests,
Esteemed Colleagues,**

On behalf of the CIT Conference organizing committee, I am honored and delighted to welcome you to the International Conference on Intelligence-Based Transformations of Technology and Business Trends (ICITTBT) with this year's motto:

SHAPING THE FUTURE:

MULTIDISCIPLINARY APPROACHES TO DIGITALIZATION AND ECONOMIC GROWTH

It is quite obvious that there are more economic crises than ever in the world. However, digitalization has become a part of our daily lives. We'll talk about and resolve a variety of potential risks. Naturally, getting together with academics from around the world to understand one another and share ideas is one of the finest methods to achieve this.

It is a great pleasure for me, this year, to welcome participants from all over the world: Albania, USA, UK, Italy, Turkey, Azerbaijan, Latvia, Poland, Tunisia, Greece, Portugal, Serbia, Uzbekistan, Malaysia, North Macedonia, Malta, Bosnia Herzegovina, Kosovo, Bangladesh, China with more than 100 full papers, to exchange experience and work together on this day on the exciting fields of economy and technology.

The creation and application of knowledge in the sectors of social, economic, and technical depend on the vision and mission of CIT Cooperation. The conference is seen by CIT as a great chance to strengthen relationships with the participating institutions and as a way to advance our purpose of fostering student skill and ability development while fostering competitiveness and raising educational standards. Additionally, as a chance to realize our objective of equipping students with the skills necessary to impact their own lives, professions, and society as a whole.

I know that the success of the conference depends ultimately on the many people who have worked with us in planning and organizing both the technical program and supporting social arrangements. In particular, we thank the Program Chairs for their wise advice and brilliant suggestion on organizing the technical program; the Scientific Committee for their thorough and timely reviewing of the papers, and our sponsors, and the Partner Universities for their support as well.

A special thanks should go to the CIT - Organizing Committee members who have all worked extremely hard on the details of important aspects of the conference programs and social activities, and the CIT Board of Administration and the Rectorate for always being supportive of any academic activities.

To conclude, I would like to thank all participants, and reviewers for their immense contribution towards the success of this conference.

I wish you a fruitful and rewarding experience at the CIT Conference.

Truly yours,

Prof. Dr. Ismail Kocayusufoglu
On behalf of Organizing Committee



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Expected Impact of The First Corporate Bond Issued on the Albanian Stock Exchange

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Abstract

This study aims to investigate the anticipated consequences of the inaugural corporate bond issuance on the Albanian Stock Exchange (ALSE) and its potential ramifications for the bond market, investors, the broader financial sector, and the Albanian economy. Given that the ALSE has been predominantly characterized by government bonds, the introduction of the initial corporate bond represents a noteworthy landmark that could facilitate the advancement of the Albanian financial market. We will scrutinize how this progression may result in heightened market liquidity by appealing to both domestic and international investors, thereby augmenting the aggregate trading volume and liquidity within the exchange. Additionally, we will deliberate on the function of corporate bonds in diversifying the array of financial instruments accessible on the ALSE, which may assist in risk mitigation and the cultivation of a more stable financial environment.

Moreover, we will analyze how the issuance of corporate bonds could promote superior corporate governance practices, culminating in increased transparency, more rigorous financial reporting, and bolstered investor confidence. Finally, we will contemplate the potential of corporate bond issuances to stimulate economic growth by supplying companies with an alternative avenue of funding for expansion and investment initiatives. This can result in job generation, enhanced productivity, and comprehensive economic development in Albania. By examining the anticipated consequences of the first corporate bond issuance on the ALSE, this study will illuminate the potential advantages and challenges associated with this development, laying the groundwork for future inquiries as the market undergoes further evolution.

Keywords: *Albanian Stock Exchange (ALSE); Corporate bond issuance; Market liquidity; Financial sector diversification; Economic growth*

Social Challenges and Cultural Resources. Three Steps Towards the Sustainable Society

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Abstract

The conference report will consist of three topics. The primary support of the author is the Human Development Report 2020. Here, we find exactly the two sociological problems that matter to us: first, the relationship among the global process of social change and cultural transformations and the knowledge of globalization we share; secondly, a new definition of the real needs of knowledge for sustainability and democratic citizenship as it is today, after the pandemic. We will refer to the Second Part of the Report, dedicated to the strategies to be implemented and to innovative actions to be taken to trigger social change and cultural transformation, along three lines that in terms of sociological research appear very clear to us. The first concerns: “social norms, which frame socially permissible – or forbidden- behaviors. Sometimes understood as informal institutions, they have been less explored as a mechanism for change than formal institutions based on authority (exercised as government regulations, for instance) or price (providing consumption and production on incentives)”. The second guideline concerns the incentives for change and in the first place the complex interaction between the different economic and regulatory typologies that we have at our disposal. The affirmation that interests us, however, is the following: “Even if people do not change their minds, they may still respond to incentives based on what they can afford and where they see opportunities to meet their aspirations”. Here, the question lies in identifying the crucial economic relationship between the environment and the society, and if we can collectively read it as the relationship between non-renewable resources and generations of people exhausted by having seen every possibility instituted to ease the severity of social inequalities deteriorate. The third line concerns a new typology of so-called nature-based solutions: “they embrace equity, innovation and stewardship of nature (...) and they rely on the participation and initiative of indigenous people and local communities. (...) Even though they are bottom-up and context-specific, they can contribute to transformational scale at higher levels”. Ultimately, the inquiry question returns to seek the different culture for a different relationship with the whole world. Sociology once again embraces the twin discipline of anthropology.

Keywords: *Sustainable development, Anthropocene, Local-global dynamics, Social and cultural dimension of Economics; Globalization studies*

Opportunities for Automation of Data Quality Testing in Data Engineering: A Survey Paper

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Abstract

This survey paper explores the potential for automation in data quality testing within the field of data engineering. Data quality plays a crucial role in ensuring the accuracy and reliability of data, and as data volumes continue to increase, manual data quality testing becomes increasingly challenging and time-consuming. Automation offers an opportunity to streamline and optimize these testing processes.

The paper provides an overview of existing techniques, tools, and frameworks that aim to automate data quality testing. It examines various dimensions of data quality, including accuracy, completeness, consistency, and timeliness, and explores how automation can address these aspects. The survey discusses the benefits and limitations of automation in data quality testing, considering factors such as scalability, efficiency, and cost-effectiveness.

Key areas of focus include data profiling, anomaly detection, data cleansing, and data validation. The paper investigates the use of machine learning, statistical analysis, and rule-based approaches for automating data quality testing tasks. It also explores the integration of automated testing processes within data pipelines and workflows, highlighting the potential synergies between automation and other data engineering practices.

The survey delves into the challenges associated with automation in data quality testing, such as the need for human intervention, the complexity of defining quality rules, and the interpretability of automated processes. It discusses the role of data governance, metadata management, and monitoring frameworks in supporting automated data quality testing initiatives.

By synthesizing existing research and industry practices, this survey paper offers insights into the current state of automation for data quality testing in data engineering. It identifies open research questions, emerging trends, and future directions in this field. The findings of this survey can serve as a valuable resource for researchers, practitioners, and organizations aiming to leverage automation to enhance data quality testing in their data engineering processes.

Keywords: *Data quality; Testing; Automation; Data engineering*

Social Media as a Marketing Tool for Albanian Higher Education Institutions

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Abstract

In recent years, technology has played a pivotal role in the transformation and improvement in most firms and academia. Its role is evident in the usage of social media, as often, firms rely on its usage to promote, attract and communicate efficiently with its stakeholders. In this study, examining the role of social media as a marketing tool used by higher educational institutions in Albania is presented. Students from various institutions were surveyed and interviewed to assess if the usage of social media had a significant effect on the marketing efficiencies of institutions such as in the: quality rating and information system; brand awareness and in increasing the number of enrollees. Moreover, a statistical analysis was used to test if the independent variable was directly affected by the dependent variables. The findings show that the usage of social media has a great impact on an institutions' brand awareness. This also shows that social media plays an important role in the marketing activities of a higher education institution (HEI). 46% of the students reported that they get all their information about the school from online sources. 54% reported that they rely on bulletins and other information about the events on their respective campuses. 64% reported that they had visited the university's website.

Keywords: *Albania, higher education institutions, marketing, social media*

The Impact of Digital Governance to Citizens (Individuals' Perception of Online Services Elbasan-Tiranë)

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Abstract

Governments around the world are constantly striving to improve the delivery of public services, enhance transparency, and promote citizen participation in decision-making. In recent years, electronic governance or e-governance has emerged as a powerful tool to achieve these objectives. E-governance has gained significant momentum as governments leverage technology to streamline administrative processes, reduce bureaucracy, and enhance service delivery.

Digital governance is a new phenomenon in our society. In this paper, we discuss fundamental issues such as what is the role of modern information technology in achieving the objectives of digital governance in Albania. Whether digital governance is a revolutionary tool for transforming governance and what are the theoretical models of digital governance that can help governments ensure the delivery of services and amenities to citizens.

The applied scientific method is a combination of a literature review on the EU and the Albanian government strategies with citizens' opinion polls in Tirana and Elbasan. Surveys on citizens' perceptions based on a random selection have been made to understand how much and how this new way of digital governance has affected the citizens' public services in Albania and to argue whether it is effective in the eyes of the citizens. A significant number of respondents from Elbasan and Tirana state that digital governance has reduced queues at counters and reduced the time of receiving services and avoided bureaucracies in contact with public agencies. While others express difficulties they encounter in using the platforms e-Albania because they are not familiar with new technologies. The analysis is crosscutting variables regarding age, gender, level of education, status of employment, and place of residence to draw relevant and adequate conclusions.

Keywords: *public administration, e-governance, citizens' satisfaction, public services*

Webometric Analysis as A Case Study Approach

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Abstract

University websites play a critical role in providing information to website guests, prospective and current students, researchers, parents, Alumni, and employers. As higher education becomes increasingly competitive, university websites are also utilized as a marketing tool to attract more students.

In this study, we analyze the Canadian Institute of Technology's website webometric ranking and suggest improvements to increase its ranking. The study is motivated by the Institute's current low webometric ranking, despite being recognized as one of the top universities in Albania.

This paper focuses on the use of webometric analysis as a case study approach to investigate the digital presence and impact of universities. We also discuss webometric analysis limitations and challenges and provide recommendations for future research.

Keywords: *Webometrics, ranking, SEO, backlinks, website visibility*

Economic Growth with Technological Knowledge Accumulation

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Abstract

In the economic growth literature, the importance of technological innovations and knowledge development has been discussed for many years. Although the Neo-Classical growth model was eventually seen as the engine of economic growth within the framework of growth theories, its length was insufficient. Therefore, technology has been considered as an exogenous factor for growth models. However, he provided opportunities for the growth theories that followed him to investigate the effect of technological innovations on growth. Technology knowledge, which is basically based on the Solow growth model, has become an important part of growth within the framework of endogenous growth theories. Therefore, many empirical studies on economic growth have taken their place in the literature by using different data sets and estimation methods reflecting technological knowledge.

This study has been one of the few studies in the literature investigating the relationship between economic growth and technological developments with spatial methods. Based on growth theories, the effects of technological knowledge on economic growth have been investigated both in countries and on neighboring countries with its spillover effect. Therefore, the effects of the number of patents representing technological knowledge, covering the period 1996-2019 of a group of OECD countries, on economic growth were investigated with the help of spatial econometric methods. First, various weight matrices were used to test for the presence of spatial effects. The existence of spatial effects has been proven according to the test results of the countries with neighbors at a distance of 1000 km. Then, predictions were made using spatial econometric models. According to the results obtained, while the economic growth of the countries is positively affected by their own technological knowledge, there is no information that the surrounding countries are affected by the technological knowledge. The same is true for investment rates, but there is a spillover effect for population and human capital.

Keywords: *Economic Growth, Technological Knowledge, Patents, Spatial Econometric Analysis, Spatial Panel Data Models*

Tourism Industry Ecologization: A Comparative Analysis Between Albania and Latvia

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Abstract

Albania and Latvia are considered emerging tourist destinations. Both countries attract a large number of visitors every year, thus contributing significantly to economic development and employment. On the other hand, the intensive development of the tourism industry in these countries has increased the risk of environmental pollution and the use of resources in an unsustainable way. The environmental problems associated with this sector can put at risk the fulfilment of the Sustainable Development Goals, especially objectives 6, 7 and 12. To address these problems, today the focus is on tourism industry ecologization, which enables sustainable development in the field of tourism, adopting methods that are ethical, sustainable, and profitable with the intention of striking a balance between tourism growth and environmental preservation.

The purpose of this paper is to analyse the environmental impact of tourism industry in Albania and Latvia. To assess the degree of ecologization of this industry, the Driver-Pressure-State-Impact-Response model will be used, with data for the period 2010-2021. This model is proposed by the European Environment Agency to solve environmental problems, determining the factors that are causing environmental issues, measure the state of the environment, and evaluate the effects of tourism industry on the environment. This can help in the design and implementation of strategies to encourages ecologization and sustainability in the tourism industry in both countries.

Keywords: *Tourism Industry; Ecologization; Sustainability; DPSIR Model*

The Impact of Digitalization in Public Services Performance

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Abstract

The main objective of this research study was to assess the effect of digitalization on the performance of public services organizations in Albania. The study will also examine how the increasing of digitalization will improve efficiency and effectivity of public services. The required data were gathered mainly from primary but also from some secondary sources through surveys and semi-structured interviews.

Digitalization is providing the public sector the opportunity to make its administration simpler, faster, more efficient, transparent and therefore more citizen-friendly from the ground up using modern technology. Generally speaking, the digitization has a proven impact on reducing unemployment, improving quality of life, and boosting citizens' access to public services. Except for this, digitization allows governments to operate with greater transparency and efficiency, decreasing the corruption level.

The relevant data gathered though survey were processed and analysed accordingly and a summary of the adequate finding will be projected regarding respondent's perceptions about the quality, pricing, timing, transparency, corruption, efficiency and effectivity of public services.

Research hypotheses were tested using such techniques as Comparison Based methods. The findings among other things, showed a significant positive relationship between increasing the digitalization level of public organizations and public service efficiency and effectivity and transparency.

Regarding the research findings, the authors recommended an increase of digitalization level of public services organizations in order to provide more simpler, faster and friendly services for the public in Albania together with increasing transparency and reducing corruption level.

Keywords: *Digitalization; Organizations; Public Service; Impact*

The Impact of Industry 4.0 Technologies on Corporate Financial Performance: Exploring the Role of Environmental, Social, and Governance (ESG) Practices

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Abstract

Industry 4.0 is seen as a revolutionary phenomenon for organizations, with potential benefits for corporate financial performance. This study aims to examine the impact of the adoption of Industry 4.0 technologies on companies' financial performance while taking into account the effect of ESG practices on this relationship. To test this relationship, we analyze the level of disclosure of Industry 4.0 practices in companies' annual reports. Using the panel data quantile regression method, we found that the adoption of Industry Technologies 4.0 has a significantly positive effect on companies' financial performance. Moreover, our results show that ESG scores reinforce this relationship, highlighting the importance of sustainable practices for company financial performance. We also examined the impact of the economic policy uncertainty index on this relationship. Our results show that this index has a significant negative impact on this relationship, highlighting the importance of proper strategic planning to navigate uncertain economic and political environments.

Keywords: *Industry 4.0, Technologies, Corporate Financial Performance, ESG, EPU*

The New Technological Frontiers of Tourism. Immersive Tourism Through the Use of Drones and Virtual Reality

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Abstract

Travelers see 2023 as an important year to get back to exploring the world. Among the data that emerges, a new way of conceiving travel appears. As the world adjusts to the "new normal" after a period of restrictions on domestic and international travel, travelers are eager to get back to exploring the world as they once did. Tourism is a matter of eyes. Those of travelers start dreaming of seeing the place they want to visit even before they can actually look at it. The formation of an idea of the destination precedes the journey, sometimes by a long way. The images – of brochures, commercials, those of websites or social account pages – must be irresistible. Well: drones, in this sense, can help in the formation of that dreamlike image that every traveler wants to have of their destination. In tourism, the emotional aspect plays a role that should not be overlooked: those who travel want to feel awe and wonder. He wants the journey he has made to leave an important mark in his memory, also thanks to the emotions he has been able to arouse. Using drones to promote the territory helps to bridge the gap that exists between people (tourists) and the surrounding environment (territory), but not only that, it allows those who have difficulty traveling or to be able to make "visits" during a journey to experience the emotions that only some ways of using images can give you. The vision of the virtual that will develop into reality. Thanks to technology, great strides have been made, just think of the apps we have on our mobile phones that can help us by providing us with a location-related service, apps that help us find tourist facilities, restaurants, shops, points of interest. This has greatly improved our tourist experience but we will see together what are just further fields of exploration.

Keywords: *Tourism, Drone, Virtual, Development, Territory*

Gastronomy Cities Network in Terms of Culturel Heritage: Denizli Case

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Abstract

Tourism always be a sector which has high returns so draw attention to itself. Tourism has many fields for getting income but it needs refreshment for sustainable income. For this reason, Industry workers are working on innovator options. Tourism professionals wants to diversify their service by doing four season working opportunity, working with industry employee more effectively and gastronomy which is always focusing point for all the time and all the people. Denizli province is already tourist destination with Pamukkale, Hiearapolis ancient city, Laodikya ancient city and ect. As a tourism industry workers and researchers, we want to add a new option for Denizli province with gastronomy identity so we can sustain tourism attention to Denizli province. As result of this ideas we made an investigation on gastronomic elements of Denizli province. For the aim of this study is to evaluate Denizli province within the scope of gastronomy cities criteria in terms of sustainable development. In the study, an interview form was applied to 11 tourist guides and 12 tourism agencies actively working in the tourism sector in Denizli Province. There are 12 questions in the semi-structured interview form. The interviews were mostly conducted face to face. In our work, we are getting information about gastronomic knowledge of Denizli province and share the outcome of investigation to contacts. As a result of the study, it was concluded that the participation of Denizli province in the Gastronomy Cities Network will contribute to sustainable development.

Keywords: *Gastronomy, Gastronomy Cities, Development, Sustainable Development*

Estimating Used Car Prices: A Comparison of Hedonic Regression and Machine Learning Models

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Abstract

The accurate estimation of used car prices is crucial for both buyers and sellers in the automotive market. In this research, we compare the performance of linear regression techniques and machine learning models in predicting used car prices. We collected a comprehensive dataset comprising over half a million used car records, encompassing various features including age, mileage, brand, model, fuel type, engine size, and transmission type. Utilizing statistical analysis, we examined the relationship between these features and the prices of used cars. Additionally, we implemented Hedonic Regression, Random Forest and Gradient Boosting algorithms to develop predictive models. Our findings indicate that machine learning models, particularly Random Forest and Gradient Boosting outperform traditional linear regression techniques in terms of predictive accuracy. These models exhibit higher R-squared values and lower root mean square error (RMSE), highlighting their superior performance in estimating used car prices. Furthermore, our study extends beyond predictive performance to consider the interpretability of the models. While machine learning models exhibit superior accuracy, they may lack the transparency and comprehensibility of linear regression techniques. The interpretability of models is essential for understanding the underlying factors driving used car prices, aiding in decision-making and market analysis. Moreover, feature importance analysis reveals that variables such as mileage, and age significantly influence the prices of used cars. This research contributes to the field by offering a comparative analysis of linear regression techniques and machine learning models for estimating used car prices. The findings serve as a valuable resource for buyers, sellers, and industry professionals, enabling them to make informed decisions based on accurate price estimations. By leveraging advanced modeling techniques, this study highlights the potential of machine learning in the automotive market and encourages further exploration of predictive modeling approaches for pricing used cars.

Keywords: *used car prices; hedonic regression; random forest; machine learning models; comparative analysis*

Digital Silk Way

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Abstract

This article discusses the Digital Silk Road project, which aims to create a modern digital infrastructure in the regions of Azerbaijan, Georgia, and Kazakhstan. The project includes initiatives such as the construction of a smart fiber optic network and the development of advanced technologies such as cloud computing, big data analytics, and the Internet of Things (IoT) to boost internet coverage in the region and support digital business growth. This project is implemented under the control of Neqsol Holding, a diversified technology company operating in Azerbaijan. The Digital Silk Road project has significant potential to contribute to the economic development of these relatively underdeveloped Central Asian countries by providing fast, reliable, uninterrupted, and secure internet connectivity to governments, businesses, and individuals in the region. Additionally, the text also explains the historical importance of the Silk Road and how the modern Silk Road project, also known as the Belt Road, is facilitating the flow of goods, services, and people between Europe and Asia, with a focus on improving connections between comparatively underdeveloped Central Asian countries and contributing to their economic development.

Key Words: *Digital Silk Road, Belt Road, E-commerce, GPON technology, Turkic World*

Investigating the Role of Business Model Innovation in the Relationship Between Digitalization and Firm Performance

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Abstract

Digitalization is considered an emerging phenomenon that enables businesses to develop new markets and business models. It helps firms expand the scope of their activities and enables organizations to become more efficient. It is now a reality for firms and contributes to their value creation. Thus, the aim of this paper is to investigate the relationship between digitalization and firm performance through the mediating role of business model innovation and to do so, a self-administered questionnaire with a sample of 70 Tunisian firms was conducted for this purpose. The main result of the analysis, confirms that digitalization is positively related to business performance, with business model innovation mediating this relationship.

Keywords: *Digitalization, Firm performance, Business model innovation*

Mitigating the Risks of SQL Injection Attacks: Insights and Recommendations

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Abstract

This research paper provides an in-depth analysis of the issue of SQL injection attacks and proposes recommendations for mitigating their risks. The study aims to explore the various methodologies and techniques used by attackers to execute SQL injection attacks, the potential consequences of these attacks on target systems, and ways to prevent them.

The research methodology used in this study involves an extensive literature review of previous studies on SQL injection attacks, simulating SQL injection attacks on multiple websites, and analyzing the results to identify common vulnerabilities and attack patterns. The findings reveal that SQL injection attacks are a persistent and prevalent threat, capable of causing severe damage to target systems, such as data loss, data theft, and system downtime.

Moreover, the study identifies key vulnerabilities that make systems susceptible to SQL injection attacks, including the use of dynamic SQL statements, poor input validation, and inadequate user privilege management. These vulnerabilities allow attackers to manipulate the database and execute malicious SQL queries, thereby compromising the confidentiality, integrity, and availability of the target system.

To prevent SQL injection attacks, the study proposes several recommendations, such as the use of parameterized queries, input validation, and restricting the privileges of the database user. Parameterized queries ensure that the input data is treated as data rather than as code, thereby preventing attackers from injecting malicious SQL queries. Input validation involves checking the input data to ensure that it adheres to the expected format and data type. Restricting the privileges of the database user limits the access that an attacker can gain even if they successfully execute a SQL injection attack.

The paper concludes that preventing SQL injection attacks is crucial for ensuring the security and integrity of the systems. It emphasizes that implementing effective preventive measures can significantly reduce the risk of SQL injection attacks. Therefore, it is essential for organizations to adopt these recommendations to protect their systems from such attacks.

Keywords: *SQL injection attacks, vulnerabilities, preventive measures, parameterized queries, input validation*

The Technological Revolution Strengthened the Trend of Globalization

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Abstract

Our analysis claims to examine in thick lines the nature of globalism, which as a starting point tends to carry the fact of post-modern changes that were determined both by the technical-technological revolution and by the business structural changes that "warned" the effects of the fall of the "Wall of Berlin" (1989), as well as the expansion of sciences in general. However, if this context of the explanation of the "millennium" is taken as a reason to explain an occurrence, ideology, tendency, or phenomenon which has happened or will eventually happen in the future, then it is impossible to talk about prejudices, events, phenomena, or even happenings in different spheres of development. We say this, because the nature of the development of information technology, as well as "artificial intelligence" (now recently) of today's events and phenomena is so fast and so dynamic that it is difficult to predict what will happen. EG within a decade much less within a century and much less within an entire millennium?! A millennium ago, e.g. many events have happened and many events which deserve our curious attention and which have left scars or traces in the late European history, such as; feudalism, the early Middle Ages and its well-known obscurantism, then the discovery of America, the rule of the Spanish in America, the religious wars (crusades), the emancipation and progress of several civilizations, the rapid development of science and technology, the French bourgeois revolution, the independence of many countries, the industrial revolution, the cold war, and especially the technological revolution and artificial intelligence that are changing not only the world but also the business world. With the diopter of an empirical sociology, we will also be able to record that: the end of the 20th century, or the end of the second millennium in the annals of world history will be remembered for the events that not only shook the world, but also changed it in many aspects and on many levels. Indeed, the end of the Cold War, the subsequent collapse of the communist ideology in all its ethical, political, and above all economic dimensions, then the unipolarity of the world political scene known as "pax americana", together with the competitiveness of the heterogeneous forms of capitalism of this century and the problems of the transition process together with the war in Ukraine that are still evident in the part of the states that came out of the sphere of Russian influence in South-Eastern and Southern Europe, then the enormous increase of transnational companies in the world market (especially those dealing with informational and technical-technological discourse, prominent as (W) intel-ism *), as well as the so-called Asian "boom" (which included Japan, China, Malaysia) known with the phrase "tigers", together with the increased global uncertainty regarding energy and ecology, we would say that these were just some of the characteristics that distinguished and identified the world of the last millennium. But globalization and information technology changed the old.

Keywords: *globalism, revolution, technology, Berlin Wall, "Asian boom", business structural changes, Kosovo, dependence, technological civilization, open society, etc.*

Performance Assessment Indicators of the Oil & Gas Industry in Albania

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Canadian Institute of Technology, Albania

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Abstract

Business performance indicators are an essential part of an organization's capability to evaluate its position since they make sure whether the goals of the company are being met. Their evaluation and improvement, on the other hand, are frequently done out of necessity and consultant-driven process rather than one based on scientific principles. This subject is a matter of interest for a lot of academics and businesses because it can indicate the connection that exists between the performance of a company and the indicators that a company has chosen as a measure of performance. Above said, this research will consider the theoretical background of financial indicators in the oil and gas industry in Albania, focusing on internal factors. To reach this objective 10 companies from 2011 to 2020 will be examined by using multiple regression analysis to determine the impact on profitability. The model selected focuses on the quantitative aspect evaluating of business performance. The dependent variable is Return on Assets whereas the independent variables are capital structure, liquidity, and company's risk. The results demonstrate that liquidity has no substantial effect on the financial performance of oil and gas businesses in Albania, whereas the capital structure and company risk positively affect the profitability of these companies for the period considered.

Keywords: *Performance indicators, Oil & Gas industry, Effectiveness, and internal factors*

Applications of Deep Learning to Magnetic Resonance Imaging (MRI)

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Abstract

During the recent years, machine learning and especially deep neural networks have received significant attention and are increasingly being applied to clinical practices. Medical imaging technology, biomedical data analysis, computer-aided diagnosis, and healthcare in general all stand to benefit greatly from these breakthroughs, which are only now beginning to be realized.

Our area of interest is the Magnetic Resonance Imaging (MRI) scans, which is also a rather recent medical practice. The usage of MRI has risen tremendously since its inception in the 1970s and subsequent adoption in the 1980s, resulting in interesting new fields of research. The availability of sophisticated, low-cost computer hardware over the past decade, has been the primary driving force in the advancement of computer vision in medical research, which has led to immense developments in digital MRI image analysis that ranges from simple qualitative analysis of disease detection to acquiring more insight into its nature.

In the field of MRI, deep learning has been applied to each stage of the classical medical image processing workflow, from image acquisition (in complex-valued k -space) and retrieval to preprocessing, segmentation, feature extraction and disease detection or prediction. The primary objective of this study is to provide a broad overview of the applications of deep learning techniques and architectures in MRI-based research.

Keywords: *deep learning, medical imaging, Magnetic Resonance Imaging, image reconstruction, quantitative susceptibility mapping*

Azerbaijan's Industry of Oil and Gas Sector

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Abstract

Azerbaijan's oil and gas industry, which has undergone significant economic transformation since its independence in 1991. Oil and gas account for more than 90% of Azerbaijan's exports, and the industry contributes around 40% of Azerbaijan's GDP. The state-run company, SOCAR, dominates the oil and gas industry in Azerbaijan, controlling most of the production, refining, and distribution. Azerbaijan has substantial gas reserves, estimated to be around 35 trillion cubic feet. Azerbaijan's oil and gas sector faces significant challenges, such as the decrease in oil production from mature fields, which reached its peak in 2010 at approximately 1 million barrels per day but has since declined to around 700,000 barrels per day. The global shift towards renewable energy sources is another significant challenge that could affect Azerbaijan's economy and its ability to attract foreign investment. The text also highlights the industry's contributions to employment, foreign exchange earnings, infrastructure development, technology transfer, and tax revenues for the Azerbaijani government.

Keywords: *Oil and gas; GDP; Infrastructure development; Renewable energy sources; Supply chains and logistics.*

Chatbots and Industry 4.0

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Abstract

Conversational artificial intelligence (CAI) more often denoted as a chatbot is an instantaneous approach used for depicting answers to those humans wanting to solicit queries via this medium. A tiny pop icon and or imagery often located at the bottom of a window (i.e., nearer the rightmost corner) of most webpages, used for asking questions whilst shopping online and in some instances also making payments. Chatbots are considered revolutionary owing to the user interface design specificity of each. Henceforth, they do ensure that human and computational interaction are primarily interactive. Because of this, they are equipped to navigate all associated digital platforms.

The versatile nature of said chatbots has allowed for businesses operating online to exploit its core functionalities and in essence has created a hotpot for handling many tasks. Whatever we can envision, a chatbot can in principle be used to aid humans and has grown predominantly in the context of social media, logistics and scheduling, application functionality and even in human resources.

Core algorithms seamlessly simulate, automate, and streamline customer service tasks in a quick yet convenient manner. All of which is done via access to servicing. Industry 4.0 is not an area of research that has been research in greater depth. This paper is geared towards demonstrating the viability of and stages of its usage will in industrial settings.

Keywords: *algorithms, chatbots, conversational artificial intelligence, industry 4.0, manufacturing*

Exploring the Virtual Reality Experience of The Louvre's Mona Lisa: A Study on Online Reviews

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Abstract

The subject of virtual reality applications in the tourism sector has attracted the attention of previous literature (Yung et al., 2021; Yung & Khoo-Lattimore, 2019). Especially, the use of virtual reality applications in the cultural heritage sector has been frequently discussed (Chong et al., 2022; Kassahun et al., 2018). Some authors emphasized the potential of virtual reality to maintain the sustainability of museums since virtual reality enables to create their virtual copies (Ahmed et al., 2020). Moreover, virtual reality was seen as a tool to co-create value (Jung & tom Dieck, 2017) and enrich the experience that museums offer to visitors (Trunfio et al., 2018). The aim of this paper is to explore how museums can use virtual reality applications to enrich the value of their main exhibits. In this context, a good example is the Louvre's "Mona Lisa: Beyond the Glass" virtual reality experience, by which the museum provides an immersive journey into its most important art piece Mona Lisa and the story behind the painting (Ahmed et al., 2020). Therefore, online reviews of the users of this experience on the international game review platform Steam were analyzed. The content analysis method was used as analysis method. The findings revealed the dimensions of the virtual reality experience, as well as its stimuli and outputs. Accordingly, the types of experience are education, immersion, and substitution of the real. The stimuli are multisensory attributes. The experience outcomes are appreciation, recommendation and expecting more. Hence, the results highlight that experiential values in various dimensions can be created with the use of virtual reality. In addition, this study offers practical implications for the design and implementation of virtual reality experiences for the Louvre and other museums.

Keywords: *Virtual reality, museum experience, museum marketing, digital marketing, immersion*

Volatility Spillovers and Time Varying Correlations Across Stock and Commodity Markets: An Assessment Through Epidemic and Crisis Era

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Abstract

The financial and economic stability of the business world has been significantly impacted by several crises throughout time. These crises also changed and affected the stock markets throughout the globe. The study examined the nonlinear behaviour of well-known stock markets in the US, Europe, Canada, and Asia (S&P 500, Nikkei 225, CAC40, DAX30, Bombay stock index, Hong Sang index, and Canadian Stock index market). We also investigate the commodity indexes (Gold, Bitcoin, Brent Crude Oil, and West Texas Crude Oil). The transmission of returns and the volatility propagation pattern across stock-commodity markets throughout the subprime crisis, the standard period, and the COVID-19 era were examined using the VAR DCC MEGARCH model. These results demonstrate that profits made in the financial markets would normally take place under ordinary circumstances. Though, the correlations intensify and become more complicated during the subprime crisis and the COVID-19 period (especially between the financial market indices and the oil commodity indexes). However, the statistics of the volatility spillover during the pandemic period showed that there is a definite rise in the uncertainty of the financial market indexes due to index instability. The analysis also showed that the financial markets experienced a substantial leverage effect during the pandemic and the subprime crisis. According to the research, Bitcoin was crucial for reducing portfolio risk during the health crisis, and that Gold is the greatest option for investors to diversify financial risk

Keywords: Mean and volatility spillovers, Commodity markets, VAR-DCC-MEGARCH model, Crude oil, Gold, Bitcoin

PSNR Based Comparative Analysis for Visible and LSB Watermarking to Ascertain Authenticity

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Parmanand

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Abstract

In telemedicine, it is very important to transmit medical data securely over the internet. To ensure that data transferred over the channel is not tampered and data belongs to the legitimate patient. To ensure this authentication and ownership of medical data becomes very important. This article is focused on why authentication and ownership are important in telemedicine. For carrying out this survey, results are calculated based on different techniques used for watermarking, MATLAB and OpenCV of Python are used. The images used are X-Rays, CT- Scans which are taken from DICOM. This survey has been done by choosing articles from IEEE, Elsevier, ACM, Google Scholar, etc. This article is focused on ensuring the authenticity of medical data during transfer over the network. This article compares the different techniques used for watermarking for ensuring authenticity, robustness against attacks, and imperceptibility. It also compares all these using PSNR values which plays a vital role in defining the performance of a particular technique. This article further helps in deciding a novel approach to ascertain the authenticity and ownership of medical data, transferred through the internet.

Keywords: *Discrete Wavelet Transform, Schur Transformation, Singular Valued Decomposition, RDWT, Peak to*

China's Fight Against Covid-19: Analysis in Terms of Crisis Management

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Abstract

As we know, the pandemic spread widely in the global arena in 2020-2021, and therefore many countries had to take quarantine measures. The epicenter of the epidemic was the Chinese city of Wuhan. In this regard, the Chinese government has begun to take measures that will not harm the country's economy. Many models have been proposed for this. In order to maintain stable state-citizen relations in the event of a pandemic, cases of easing the quarantine implemented by the country's leadership can be considered reasonable in the eyes of civil society. The Covid-19 epidemic has had professional, social and psychological consequences on management levels, and the information flow and updates that emerge every day have made it necessary to make quick decisions, review internal and external processes, create strong communication mechanisms and use different features of leadership models at the same time. The article contains an analysis of the Chinese government's action plan to reduce economic risks during the COVID-19 pandemic. It is considered that this study will make important contributions to the literature in terms of expressing the changes, developments and predictions that have emerged in the field of management and organization in the first year of the pandemic period, which is expected to spread over a long period according to the scientific world. It is considered that the studies to be carried out with the end of the pandemic process in the future will be beneficial for scientists in terms of comparing the development of the process.

Keywords: *China, COVID-19, pandemic, crisis, management*

National Culture and Audit Fees: A Cross-Country Investigation

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Abstract

This study aims to investigate the effect of national culture (power distance, individualism, masculinity, uncertainty avoidance and long-term orientation) on audit fees. We used a sample of 920 firms from 33 countries for our analysis. Using Hofstede's (1980, 2001) cultural dimensions (power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation), we find that collectivist cultures have high audit fees payment. We also investigated the moderating effect of the legal system on the relationship between national culture and audit fees. Our findings suggest that the legal system is a strong moderator of this relationship. We find that in common law countries, national culture dimensions have a strong effect on audit fees. The results show that audit fees are associated with low power distance, individualism, and long-term orientation and its' positively associated with masculinity and uncertainty avoidance. Our study adds to the extant literature a further understanding of the impact of cultural behaviours on auditing and auditors' behaviours. We also highlight the importance of the moderating effect of the legal systems, which gives a further explication of cross-countries behaviours. Our findings can help, investors, regulators and managers who have to take into consideration cultural dimensions and characteristics when adopting new legislation and making reforms dealing with taxation. Our findings are, also, useful to the managers of international audit firms to understand auditors' behaviours in different countries.

Keywords: *National Culture, Audit Fees, Legal system*

Design of A Cmos Flash Analog to Digital Converter for Low-Power Communication Devices

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Abstract

High-speed electronic communication devices frequently employ analog-to-digital converters (ADCs) in order to convert analog signals to equivalent digital signals for processing of information. Flash ADCs are widely used in communication devices and low power consumption is one of the design goals of the IC designers. By choosing the appropriate ADC circuit topology and optimizing the aspect ratio of the transistors in the ADC may help to achieve this. The research proposed a low power 3-bit comparator based flash ADC. The voltage divider, comparator, and encoder make up the ADC, and the comparator is crucial in decreasing the current source and capacitor to achieve low power usage. The proposed circuit has been designed and validate through Mentor Graphics EDA tool using 0.18- μm CMOS process. The simulation result demonstrated that the suggested 3-bit ADC achieved (22.40 x 13.40) mm² chip size and 6.5207 mW power consumption. The proposed design will help to produce low power communication devices for low power applications.

Keywords: *ADC, CMOS, Comparator, Communication Devices, Low-power*

Process of Digitalization as Outsourcing Challenge for the International Companies in The Republic of North Macedonia

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Abstract

Outsourcing, as a type of international trade is a relatively new phenomena in the world trade. The digitalization process has enabled companies to geographically dislocate their services and/or production processes to other locations in the world, with the best cost advantages. Although outsourcing is not sufficiently well understood in the Republic of North Macedonia, digital economy plays a vital role in the growth of this sector. The research made shown that the Republic of North Macedonia is one of the most desired destination in the South East Europe for the foreign companies, where outsourcing has sustained a higher employment growth rates and has established into a highly promising industry in the structure of the economy in the country.

Through the deduction method, the research paper has a role to investigate the global trends in the outsourcing from one side and implemented outsourcing trends and factors in the Republic of North Macedonia, from another side. The paper will identify the legal regulation of digitalization in the Republic of North Macedonia, will present the data and evidences from the relevant state institutions, as well as will analyze the economic and social benefits of the users, or so called investors, in terms of their business efficiency.

Keywords: *Outsourcing, Digitalization, North Macedonia, Economy, Business Process Outsourcing*

The Impact of Patents on Economic Growth in Western Balkan Countries

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Abstract

Patents, which refer to the exclusive rights granted to anyone who invents something new, useful, and non-obvious, related to creativity and innovation, provide investors with the protection of their intellectual property. The number of patents is an indicator of technological development, and it can influence economic growth by encouraging investments in research and development, promoting creativity and innovation, which results in economic advantages (competitive and comparative), facilitating knowledge, spillovers, etc, and vice versa too.

The purpose of this research paper is to analyse the possible impact of patents on economic growth in the countries of the Western Balkans. A data panel, with data for the years 2010-2021 will be used to measure this impact. In addition to the number of patents, the model will also use other variables, such as creativity, innovation, infrastructure, education, knowledge management, and government policies.

Keywords: *Patents; Intellectual Property; Innovation; Creativity, Knowledge Management; Economic Growth; Panel Model; Western Balkans.*

Predicting Bank Client Subscription to Term Deposits: An Effective Machine Learning Approach

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Abstract:

Data-driven methods are used by banking institutions to improve decision-making and customer relationship management. Predicting customer behavior, like the subscription to term deposits, is essential for enhancing the effectiveness of marketing efforts and resource allocation at banks. Effective prediction models can assist banks in better discovering potential clients, which will enhance profitability and satisfaction among customers. Machine learning algorithms have become useful modelling tools for complicated correlations between customer traits and the tendency to sign up for term deposit scenarios.

This study applies machine learning to forecast bank term deposit subscriptions, helping banks to make data-driven decisions and enhance customer relationship management techniques. This research utilizes a thorough methodology, which includes data preprocessing, feature selection, hyperparameter tuning, and evaluation of various classification models. In a real-world banking dataset, term deposit subscription was predicted by four well-known classifiers: K-Nearest Neighbors (KNN), Support Vector Machines (SVM), Random Forest (RF), and Artificial Neural Networks (ANN). The data pre-processing phase included cleaning, management of missing values, scaling of features, label encoding, and class imbalance correction. The most important features for forecasting term deposit subscriptions have been identified from feature selection using correlation analysis. Hyperparameters of classifiers were tuned to enhance their performance and assure accurate predictions. In terms of accuracy, precision, recall, F1-score and area under the ROC curve, the KNN and RF classifiers outperformed the SVM and ANN classifiers. This paper places great importance on the performance of optimized and efficient prediction models to improve banks' capacity to forecast term deposit subscriptions.

Keywords: *KNN, SVM, ANN, RF, Bank-Term-Deposit*

Benefiting Society, Caring Nature Through AI Ethics

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Abstract

Using advanced technologies in general and AI in particular, are enabling and bringing valuable services and contributions to society in many directions. Likewise, for nature, their contribution is significant in different areas. But, as we consider the positive aspects of AI for society and nature, we must bear in mind that at the same time, the advancement of technologies and the use of AI is causing societal side effects and external costs, which are tangible and visibly damaging society and nature.

In this presentation, through literature sources and empirical findings, I will highlight the positive and side effects of the application of AI, assessing that the challenge of society and professionals in the field is to minimize side effects and external costs of AI, making the AI beneficial for humanity.

The paper conveys the hypothesis that the application of AI Ethics is an effective tool to make AI useful and beneficial both for society and for nature. For this purpose, corporations and businesses of all sizes, must clearly articulate their attitude and behavior in regards to the use of technologies. The collection of literature, empirical findings, analysis, comparison, generalization, and evaluations will be used as research instruments to testify the idea presented.

The paper recommends that business organizations should apply the AI Code of Ethics as an integral part of their daily activity.

Keywords: *artificial intelligence, ethics, society, nature, business*

Participation of Employees in Formation and Distribution of Income of Enterprises

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Abstract

This article discusses the impact of employee motivation when participating in the profits of enterprises and the country's GDP. The influence of employee motivation on increasing productivity is also considered. To do this, we consider two directions of motivation. The first direction consists of considering the systems of participation of employees in the creation of profits of the enterprise, the second direction is the receipt of income from the participation of employees in the formation of the property of the enterprise. At the same time, the analysis is carried out in the article in two systems - in the private sector, also in the public service sector, where the forms of participation and income generation are fundamentally different. Therefore, the tasks were set to determine the features of approaches to ensure motivation, opportunities in the decision-making process in this direction. To determine the impact of income on motivation, statistical data on the income of those employed in the state and non-state sectors and their share in the output of total output, in GDP were used. The authors use both quantitative and qualitative indicators for analysis. Therefore, in the article, in parallel with the methods of comparative analysis, generalization and synthesis, the method of fuzzy logic is used. Using the fuzzy logic method, the authors analyzed the degree of influence of motivation on their productivity based on the assessment of the effectiveness of employees. The authors also analyzed wages and dividends on the motivation of employees. The results obtained in the course of the study lead to the conclusion that in order to stimulate efficiency and productivity, changes are needed not only in the wage system, but also in the income generation system, which may depend on certain market and non-market factors. As a result of the study, recommendations were developed on motivation to improve the performance of both public servants and private sector employees.

Keywords: *income, wages, GDP, motivation management, participation*

Investigating the Effectiveness of Natural Language Interfaces for Human-Robot Interaction

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Abstract

This research proposal examines the potential impact of natural language interfaces (NLIs) on human-robot interaction (HRI). Human-Robot Interaction is a rapidly evolving field that has the capacity to revolutionize how humans engage with robots. With advancements in technology, robots are becoming increasingly intelligent and capable of comprehending human language, leading to the emergence of NLIs. Integrating NLIs into HRI holds great promise for enhancing user experience and application effectiveness. NLIs enable humans to interact with robots using a more natural language, similar to their interactions with other humans. This improves the integration of humans and robots, resulting in more fluid and intuitive interactions. Therefore, it is crucial to investigate the effectiveness of NLIs in HRI to improve the design and development of user-friendly and efficient NLIs. The integration of AI into User-Centered Design (UCD) strategies is also explored in this thesis to produce interfaces that are more effective and user-friendly. The study urges designers and developers to offer trustworthy, open, and safe solutions and highlights the significance of taking into account ethical considerations linked to autonomous systems and AI in design. In addition, society needs to create a system of norms and regulations that will control the moral development and use of these technologies. The goal of this study proposal is to answer the following research questions about the effectiveness of NLIs in HRI. -What is the efficacy of NLIs in HRI? -What variables have an impact on NLI performance in HRI? -How can we create more efficient and user-friendly HRI NLIs? AI is being used in UCD to create interfaces. Empirical research, user testing, and data analysis will all be used in the pursuit of these objectives. The results of this study will shed light on the efficacy of NLIs in HRI, pinpoint crucial factors that have an impact on NLI performance, and offer suggestions for creating NLIs that are both more user-friendly and successful. Additionally, with an emphasis on addressing ethical issues and guaranteeing the dependability and security of autonomous systems, the research will provide ideas and proposals for enhancing the integration of AI into User-Centered Design.

Keywords: *HCI, Artificial Intelligence (AI), usage of NLI, Autonomous Systems, User-Centered Design (UCD).*

Trade-off between risks and rewards in green digital finance

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Abstract

Environmental pollution and global climate change has been offshoot due to exaggerated oil production in response to the growing energy demand globally. This danger creates dual risks for the companies. To meet own climate and environmental targets, businesses need funding in transition towards more sustainable production and operations. Green private finance has a potential to fill the existing gap in funding sustainable projects through a variety of formats, stocks, bonds, insurance, and financial derivatives.

As opposed to climate change, which dissuades sustainable development, digitalization become a rising star of the new economy as an enabler of sustainable growth. Given the high value of this “new oil”, digital transformation can be viewed as an activity of businesses to increase business value.

For the companies, understanding how to identify and roll-out the high-value solutions with less costs and risks has been a great challenge in the last twenty years. Digitalization can provide huge benefits only if the risks and rewards and digitalization process itself have been clearly identified and structured.

These two concepts supported growth of new terms in financial world, including green digital finance. There are multiple dimensions and forms green digital finance can take. Each of them holds its own risks, moreover, creates new risks as well.

The key focus of this interdisciplinary research is made on identifying the risks and rewards of green digital performance, measuring the digital risks and rewards for businesses in line with their financial and carbon performance. Using grey system theory approach, which is broadly applied to financial systems’ research with incomplete information, such as green digital finance, grey relational analysis was adopted to explain this complex relationship between digital and climate risks as the key elements of multidimensional risk system of the green finance and develop the “digi-climate” rating of the companies. Digi-climate integrated risk management can support informed financial decision-making with green private funding and improve the performance of green businesses globally. Another value of the research is the contribution to expanding the methodology to monitor development of green digital finance and take relevant action to support strategic green financing.

Keywords: *green digital finance, digitalization, climate risks, digital risks, green economy*

Exploring the factors influencing Virtual Reality acceptance in Tourism: Tunisian context

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Abstract

The tourism sector is undergoing a profound transformation as a result of the advent of Virtual Reality (VR), with virtual tourism rapidly gaining traction as a viable alternative to traditional forms of travel. Virtual Reality can help tourists make relevant decisions, live an immersive and tailored experience and adjust their travel experiences. This work aims to develop a device to evaluate the success of VR tools from an end-user perspective in the Tunisian tourism context.

The general objectives of this research are to identify the determinants (exogenous and endogenous) of the intention to use VR in tourism industry in Tunisia while producing recommendations and corrective actions of the proposed resources, methods and technological devices.

The main question is how to evaluate the success of virtual reality tools in tourism industry from the point of view of the end-users?

From a multidimensional perspective, we suggest a conceptual model of the pre-implementation success of the VR in tourism industry. The conceptual meta-model assumes the influence of contextual factors on intention to use through the process of individual acceptance.

A data analysis of 142 responses was performed. The validation of the psychometric qualities of the exogenous and endogenous constructs of the model is based on two steps. First, an exploratory stage based on the Principal Component Analysis (PCA) and α Cronbach's tests is intended to verify the validity and reliability of the variables. Secondly, a confirmatory step using the structural equations modeling has been developed.

Our results corroborate the presumed conceptual dimensions of the selected constructions and scales. The success of VR is determined by users' perception effects, perceived value and user's intention to use. The explanatory analyses of the results underscore the predominant importance of the persuasive variables related to the social influence supports, playfulness and performance expectancy of VR tools. These results prove that the success of such changes in tourism industry depend on the ability, to increase users' performance and efficiency, to yield pleasure while being user-friendly. These results are interpreted and their managerial implications discussed in this paper.

Keywords: *Virtual reality, Tourism, UTAUT, Perceived Value, playfulness*

Solar PV Power Generation (PVP) Prediction Using Machine Learning Techniques

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Abstract

Solar energy is a significant renewable energy source, but due to its erratic nature and potential for use in dispersed systems, grid integration must take power prediction into account. The viability of large-scale renewable energy projects depends on accurate projections about the future of solar power. It is necessary to consider variations in weather patterns throughout time to make accurate projections of solar electricity generation. The significance of the prediction, of to be generated energy in the energy sector is known to all for the precise management of spinning reserve, inertia and frequency response in case of any contingency. In this paper, statistical and Machine learning techniques have been deployed to predict the day-ahead solar generation at a particular site. Two algorithms namely KNN and Random Forest have been implied on the data and is being evaluated on multiple performance metrics.

Keywords: *Grid Integration, KNN, Random Forest*

Are Large Financial Portfolios Performing Well?

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Abstract

This paper explores the relationship between portfolio size and investment performance. While some research suggests that larger portfolios may outperform smaller ones due to the benefits of diversification, other studies have found that smaller portfolios may actually outperform larger ones in certain market conditions. While by increasing the number of assets, the Mean Variance model will get focused just in a few numbers of asset, other models that minimize risk will behave in the same way, but there are other, such Risk Parity models, will allocate more resources in the possible choice available. Focusing in a smaller number of assets with bring high cost in terms of turnover and a maximum drawdown in case of a crisis like the 2008.

On the other side, Risk parity models guarantee a better diversification, but by increasing the number of assets, they behave more like the naïve portfolio.

To be consistent with the result several portfolios with different number of assets are considered. A novice to this paper is a two-step procedure in the portfolio selection. This consists in first selecting the riskless assets and then distributing the risk between them using the Risk Parity models. The two-step procedure is suggested in case there is a high number of possibilities in the selection.

The performance of a portfolio depends on a variety of factors beyond its size, including individual investments, risk tolerance, and investment strategy. IN this paper we are treating the assets like stock , bond or commodities just to see their performance, without considering these other factors.

Keywords: *Portfolio Optimization, Diversification, Asset Allocation, Risk management*

Analysis of The Dynamics of Agricultural Development and Production in Kashkadarya Region

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Abstract

This article analyzes the share of farmers, dehkans and personal subsidiary farms operating in the agricultural sector of Kashkadarya region in the production of agricultural products and the increase in production, and on the basis of the obtained data developed recommendations

Keywords: *agricultural sector, farmers, dehkan farms and personal subsidiary plots, sustainable development, diversification of production, government support*

On-Demand Car Servicing Application

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Abstract

The majority of people, in our today's fast-paced world, find it difficult to book a suitable date and time for their vehicle to be serviced/repaired that fits their overly tight schedule. Keeping in mind that in order to get their vehicle repaired, the client has no other option but to bring their vehicle to the mechanic on their own and figure out how to pass time. They may either wait till their car is repaired or return home or to work whilst also determining their travel choices. Exactly these issues generally postpone regular car servicing, which may lead to an increase of unmaintained vehicles on the road, causing additional traffic problems e.g., car accidents. The aim is to build such an application which will provide car owners a convenient, time-saving and personalized car servicing experience, aiding them in preserving the quality and longevity of their cars. The application eliminates the necessity for customers to drive their vehicles to a certain location by enabling them to arrange a service that is suitable for them. The application will assist service providers in improving their customer service through two software versions. The first is a web-based version for administrators, allowing them to manage bookings and add or delete services. The second version is a mobile application reserved specifically for the mechanics where they can access their assigned services and communicate with customers by sending requests for additional recommended services for their approval. Overall, the application provides a comprehensive approach to car maintenance which allows the customers and the service providers to have a systematic view of the issues at hand as well as a technological enhancement of services that ensure value to the users.

Keywords: *On-demand car servicing, Car maintenance, Customer support, Pick-up and drop-off services*

Effects of Emotional Intelligence on Entrepreneurial Intention Among Women in Tunisia

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Abstract

In recent years, and the light of gender equality there has been a lot of talk about the development of women entrepreneurs in Tunisia making every effort to understand all the factors that may explain the intention to create a business but this topic remains relatively under-researched not well-understood. In the last years, emotional intelligence has become a major topic of interest in scientific circles as well as in the lay public, However, to date, the relationship between emotional intelligence and individual differences in entrepreneurship has been scarcely examined. The purpose of our study is developing emotional skills to fostering entrepreneurial intention among Tunisian women.

This research delves into emotional; intelligence's contribution to entrepreneurial intention among women to identify leading factors that shape this intention.

By examining emotional intelligence's impact, this study sheds light on under-researched aspect of entrepreneurship.

The main questions:

What impact does emotional intelligence have on fostering entrepreneurial intention among women in Tunisia?

Which essential antecedents plays a significant role in this association?

The purpose of our study is to provide targeted development and training programs that empower emotional intelligence skills among Tunisian women to effectively navigate the challenge, obstacles and achieve sustainable success.

The contribution of emotional intelligence to entrepreneurial intention among women was first identified using a qualitative approach a study ,8 semi-structured interviews were then carried out to identify the antecedents of entrepreneurial intention. Secondly a confirmatory step, a questionnaire was administrated to 120 women with intention to create business. The collected data was processed and analyzed using SPSS (recent edition) with the objective to identify patterns and relationship between variables under investigation.

Findings emphasize self-efficacy's mediating role between emotional intelligence dimensions and the entrepreneurial intention.

Dimensions of emotional intelligence impact the development of entrepreneurial intention among Tunisian women by influencing their ability to recognize, understand their own emotions; as well as those of others. These skills play a vital role in making decision, communication, problem-solving and relationship building which are essential for successful entrepreneurs.

Keywords: *Female entrepreneurship, entrepreneurial intention, entrepreneurial self-efficacy and emotional intelligence.*

AI Based Recommendation for Changes in Clothing Line

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Abstract

Fast fashion has long been an important source of revenue for big companies such as Zara and Pull&Bear. These shifts in fashion trends have resulted in increased sales at these retailers. For a customer with little understanding of fast fashion and knowledge of recent trends, it would be very beneficial to have a system that suggests the next article of clothing that they should buy to go along with the pieces they already own.

The model would be trained using data from user purchases. Model selection, validation, and optimization will be performed to ensure that the system is efficient and produces optimal results. We will employ cross-validation for the model selection and validation. Gradient Descent will be used for improving the accuracy and performance of the model. This model will provide recommendations based on prior purchases made by the customer as well as the frequency with each those items are purchased by others. If there is an agreement between these two purchase patterns that implies the customer generally chooses fashionable clothing. Otherwise, the model would need to provide suggestions which align the buyer's preferences to those of the majority of the customers.

This model can be further extended through integration with Computer Vision, which would provide the users with a more immersive experience by allowing them to virtually try on the various outfits.

Keywords: *Fast Fashion, Machine Learning, Artificial Intelligence, Gradient Descent, Cross-Validation*

Systematic Review: The Impact of Total Quality Management on Gold Mining Industry Performance in Sudan

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Abstract

The advent of total quality management methodologies, businesses have started fusing performance development principles with TQM requirements. A potential remedy to the current issue plaguing the Sudanese gold mining sector is total quality management (TQM). Due to low quality management and leadership practices, which affect organizational performance in the Sudanese gold mining industry. The objective of this review study is to describe and demonstrate overall quality management, as well as its essential elements, applications, and effects on the Sudanese gold mining business. We conducted a thorough analysis of the research on Total Quality Management's (TQM) effects on organizational performance. Total quality management (TQM) is the suggestion made in this article review as the answer. Total quality management will make it feasible to create and implement high-quality performance concepts by putting in place a quality control system and strong leadership within the industry. Leaders are aware that improved performance is correlated with better customer satisfaction and lower expenses. According to the study's review, the model's significance is that it can be apply to any business or organization. The findings of the article. Total quality management would enable the development and implementation of high-quality performance models by establishing a quality control system and strong leadership in the industry. A total quality management system will be beneficial to Sudan's gold mining industry. It would provide a framework for evaluating quality and competent leadership that are prepared to act and make quality decision to confront any foreseen crisis, this design put into practice high-calibre performance concepts. This review study outlines and suggests total quality management (TQM) for the Sudanese gold mining industry, as well as the essential elements of TQM.

Keywords: *Commitment, Control, Management, Quality Leadership, Strategy*

Assessment of Innovative Factors (Indicators) And Economic Growth of the Country: The Case of Azerbaijan

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Abstract

This article aims to evaluate the influence of innovative indicators on the economic growth of developed and developing nations. It provides an overview of current major trends in the economies of advanced countries, which have been shaped by the impact of Fourth Industrial Revolution technologies and subsequent changes in the technological landscape. The research highlights the significance of innovation in the contemporary stage of socio-economic development.

The Method and Research Methodology: This study relies on fundamental theoretical and empirical works by international scholars, as well as research conducted by renowned institutions such as the United Nations, the World Intellectual Property Organization (WIPO), Cornell University, and the INSEAD research institute.

Results: This study presents the findings and analysis of innovative factors, as well as the identification of available resources and conditions for innovation in Azerbaijan, neighbouring countries, and leading innovation-driven nations. Special attention is devoted to the economic, production, and other factors that impact innovation development. A comparative analysis is conducted, focusing on countries excelling in high- and medium-technology manufacturing, high-tech re-export, and ICT services export.

An econometric analysis was conducted to assess the impact of innovative factors on GDP, value added in the industrial sector, and overall profitability of industrial branches. The constructed models meet all Gauss-Markov conditions. By examining a case of a developing country, the study identified that software procurement, which entails increasing the digital component in the economy, holds the utmost significance in the present era. Research and development expenditures emerged as the second most critical factor.

Scope of Application: The results, proposals, and measures presented in the article can be applied to the development of monetary, credit, investment, and tax-budget policies, as well as for short- and medium-term planning and forecasting at both micro- and macroeconomic levels.

Conclusions: The findings and proposals presented in the article can be utilized for monitoring the innovative development of economies in both developing and developed countries, as well as for forecasting in the short, medium, and long term.

Keywords: *innovation; economy; economic growth; technology; GDP*

Dynamics of The Energy Crisis in The Western Balkans: A Call for Sustainable Energy Policies, Regional Cooperation, and Infrastructure Investment

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Abstract

This policy paper aims to examine the dynamics of the recent energy crisis on the Western Balkans region and highlights the need for sustainable energy policies and infrastructure investment. The paper foresees several factors, including the COVID-19 pandemic and the Russian-Ukrainian war, which have brought a significant volatility in electricity prices in the region, causing a very impactful energy crisis.

Western Balkans are particularly vulnerable to these price dynamics due to their low purchasing power, heavy dependence on energy imports and the lack of investment in renewable energy sources. The recent rise in electricity prices has had a detrimental effect on the region's economic development, increasing the financial burden on households and harming the competitiveness in terms of EU accession.

To address these challenges, the paper proposes a mini set of policy recommendations aimed at promoting sustainable energy policies and increasing infrastructure investment in the region.

In addition, the paper emphasizes the need for regional cooperation and coordination to address these challenges effectively. This includes promoting cross-border energy trade and investment, as well as strengthening regional institutions and frameworks for energy cooperation.

Overall, the paper argues that sustainable energy policies and infrastructure investment are essential to ensuring the long-term economic and social development of the Western Balkans, particularly in the face of external shocks.

Keywords: *Energy Crisis, Western Balkans, Electricity Prices, Price Fluctuations, Sustainability*

ChatGPT and the Educational Development: An analysis of AI Implementation in Higher Education

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Abstract

The impact of artificial intelligence (AI) on higher education is becoming increasingly evident as the technology advances. This research conducts a thorough examination of AI implementation in higher education, scrutinizing both the advantages and challenges associated with this technological progression. By conducting a detailed review of available literature, this study aims to elucidate the various ways AI can be employed to advance educational outcomes and facilitate the development of more effective learning environments. The investigation scrutinizes the diverse applications of AI in higher education, including intelligent tutoring systems, chatbots for student support services, and personalized learning. It further analyzes the potential advantages of AI implementation, such as heightened efficiency and efficacy of instructional delivery, improved learning outcomes, and increased student engagement. This research also probes the potential obstacles and dangers associated with the use of AI in higher education, including issues related to ethical considerations, data privacy, and bias. To present a more sophisticated outlook on the topic, the research uses empirical data gathered through surveys and interviews with students and educators, providing insights into how AI is currently utilized in higher education and its perceived impact on teaching and learning. Through this analysis, this study endeavors to present a balanced evaluation of the possible benefits and challenges related to AI implementation in higher education. The findings of this research hold significant implications for policymakers and higher education institutions. As AI continues to impact the educational landscape, it is imperative for stakeholders to comprehend the potential advantages and challenges associated with this technology, thereby making informed decisions about its implementation. This study offers a comprehensive analysis of the topic, affording insights into how AI can be employed to enhance educational development, and highlighting the critical considerations that must be taken into account to guarantee its ethical and effective use.

Keywords: *ChatGPT, Artificial Intelligence, Higher Education, Educational Development, Student Learning Outcomes*

A Descriptive and Comparative Analysis of Knowledge and Technology Output for Balkan Countries Under a Quality Management
Holistic Approach

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Abstract

Since this topic has drawn increasing interest worldwide, my aim in conducting this study was to highlight the significance of the knowledge and technology output index and the connections between this index and quality and quality management in a comparative analysis between Balkan countries.

The research's methodology involved gathering data and information about the knowledge and technology output index globally, including the Balkan countries. It also involved describing the recently introduced ISO family of knowledge standards, handling descriptive statistics for the knowledge and technology output index, and conducting a comparison of the knowledge and technology output index between the Balkan countries and with the rest of the world.

The primary recommendation is that businesses use ISO standards generally and the ISO family of standards for knowledge to improve knowledge and technology output activities, processes, and procedures, as well as their economies in the Balkan region to gain a competitive advantage.

Keywords: *Knowledge and technology output, ISO standards, quality, quality management, competitive advantage, Balkan countries*

Arrhythmia and Congestive Heart Failure Recognition Using Cwt and Pre-Trained Googlenet from the Ecg Signals

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Abstract

A key tool utilized nowadays for the investigation of cardiac arrhythmias is ECG. The study aims to develop a deep learning-based method for identifying congestive heart failure (CHF) and cardiac arrhythmia (ARR) from ECG with a pre-trained GoogleNet. Firstly, continuous wavelet transform (CWT) is used to transform one-dimensional (1-D) ECG data into two-dimensional (2-D) scalogram images. The proposed method has been evaluated with three different databases; namely MIT-BIH databases: the Arrhythmia (ARR) database, the Normal Sinus Rhythm (NSR) database, and the BIDMC Congestive Heart Failure (CHF) database from the PhysioNet. The pre-trained GoogLeNet receives the transformed 2-D scalogram images as the input and uses the transfer learning method to assess how well it performs. The trained weights from ImageNet are used to initialize the pre-trained GoogleNet, and scalogram images are used to fine-tune. With the aid of weighted random sampler, Adam optimizer, early stopping technique, and on-the-fly augmentation, the pre-trained GoogLeNet is optimized. Overall, for the 10s segments, the accuracy of classifying NSR, ARR, and CHF were 99.23%, 98.64%, 98.45%, and 98.54% for accuracy, precision, recall, and f1-score respectively. In comparison to other methods, the proposed method outperforms the performance. It also achieves the generalization on the imbalanced data.

Keywords: *Arrhythmia, Congestive Heart Failure, GoogLeNet, Continuous Wavelet Transform, Deep Learning*

Strategic Development and SWOT Analysis at the University of Sousse

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Abstract

Globalization has significantly impacted the internationalization of higher education, where universities strive to produce graduates who are "citizens of the world" to meet the demands of multinational companies. University of Sousse in Tunisia is focused on anchoring itself in a global community of knowledge. In order to achieve this objective, university of Sousse has engaged in a self-evaluation process as part of the "Evaluation and Accreditation of Maghrebian Universities" project. This study aims to understand the university's environment, challenges, and gaps, and proposes an action plan to operationalize different strategies.

The study adopted a two-stage approach to provide a comprehensive and constructive diagnosis of the University of Sousse. The first stage involved an exploratory qualitative study in the form of a focus group, inspired in part by the Aqi Umed reference framework. This stage aimed to avoid spontaneous understandings of the university's context and obtain a holistic view of the internal and external dimensions. The second stage was a confirmatory quantitative questionnaire constructed based on the findings from the first stage. The survey collected 143 responses and provided valuable insights into the university's environment, challenges, and strengths.

The results of the survey showed that the University of Sousse is in a strategic position to face the challenges it encounters. However, it should rely on its strengths to overcome the threats it faces. The university has developed quality projects in its institutions and must continue to pursue its objective of anchoring itself in a global community of knowledge. The self-evaluation process is aligned with other constructive self-evaluation processes of the University of Sousse and is crucial for the university's growth and development.

This study provides an in-depth understanding of the University of Sousse's internal and external environment, challenges, and gaps. The results of the survey provide valuable insights that can be used to develop an action plan to implement different strategies. The self-evaluation process is critical for the university's growth and development, and it must continue to focus on producing graduates who are "citizens of the world" to meet the demands of multinational companies in a globalized world.

Keywords: *SWOT analysis, Strategic planning; Resource-based planning; Strategic development*

Digital Transformation of the Albanian Labour Market

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Abstract

The growth of the digital economy has led to the creation of new jobs and industries, particularly in the areas of information technology and e-commerce. The digital transformation of the labour market has also led to displacing some traditional jobs, particularly in low-skilled sectors. The findings suggest that the Albanian government has recognized the importance of digital transformation and has taken steps to promote digital entrepreneurship and upskill the workforce. The National Strategy for Development and Integration (NSDI) 2015-2020 and the National Action Plan for Employment (NAPE) 2021-2025 both include measures to promote the digital economy, improve access to digital infrastructure and services, and enhance digital skills among the workforce.

However, there are still challenges to be addressed, including the need to increase digital literacy levels among the population and to ensure that the benefits of digital transformation are distributed equitably across all segments of society. The study's main contributions lie in its comprehensive review of published studies and national strategies for the digital transformation of the Albanian labour market and highlight the importance of ongoing research and collaboration between policymakers, educators, and industry stakeholders in shaping the digital transformation of the Albanian labour market.

In addition to the government's efforts, the private sector has also been playing a significant role in the digital transformation of the Albanian labour market. The study found that many businesses are adopting digital technologies to improve their productivity and efficiency, creating a demand for workers with digital skills. However, this has also resulted in a skills gap, where many workers lack the necessary digital skills to meet the demands of the changing labour market. Therefore, there is a need for a collaborative effort between the private sector and the education system to ensure that workers are equipped with the necessary skills to succeed in the digital economy.

Keywords: *digital transformation, labour market, digital economy, national strategy, upskilling*

Building a Model that is Able to Detect Fraudulent Credit Card Transactions with High Accuracy Using Python - Machine Learning

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Abstract

This study presents methods for categorizing transactions as fraudulent or legitimate. The research made use of a dataset for credit card fraud detection. The SMOTE approach was utilized for oversampling since the dataset was severely unbalanced. Additionally, a feature selection process was carried out, and the dataset was divided into training and test halves. Logistic Regression, Random Forest, XGBoost, Decision Tree, K-Nearest Neighbors, and Support Vector Machines were the algorithms being used in this topic. Results indicate that each algorithm can accurately detect credit card fraud. The proposed model may be utilized to find other abnormalities. Finally, we have made an interpretation of the classifier decision using the model that produces higher outcomes like XGB Classifier, XGBoost, Log Transformation, etc.

Keywords: *Python Programming Language, Machine Learning, Fraud Detector, Algorithms, Credit Cards, Logistic Regression, Matplotlib, XGBoost*

Advancements in Optical Metrology: The Impact of Deep Learning and Quantum Photonics

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Abstract

There have been numerous advances in the fields of engineering, medicine, environment and so forth that involve measurements as a critical part of research and applications. Especially, when it comes to reaching efficient measurements what comes in handy are optical sensors that provide results beyond just size or location.

In recent years, research have primarily relied on providing solutions by using deep learning and novel training algorithms for efficient results in the fields that optical metrology is applied. However, there is also analyzed optical quantum metrology that is bringing a new finding to light.

This paper will analyze the impact of deep learning in quantum metrology and will provide future suggestions on how to improve the results in terms of classical means by using the technologies of quantum photonics metrology to provide actual examples and applications of both technologies in real life.

Keywords: *optical metrology, optical quantum metrology, deep learning, measurements, optical sensors, image processing*

A Descriptive and Comparative Analysis of the Sustainable Development Index 2022 For Balkan Countries

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Abstract

Given the growing interest in this subject worldwide, the goal of this study was to present the significance of the sustainable development index and its relationships to other important parameters through a descriptive analysis, followed by a comparative analysis between Balkan countries using a global perspective approach.

The research's methodology entails gathering data and details about the sustainable development index globally, including the Balkan countries, managing a descriptive statistic for the index, performing a comparative analysis of this index between the Balkan countries, and contrasting the Balkan countries with the rest of the world on this subject.

The main recommendation is that when choosing the country's path toward EU integration and beyond, officials should take the sustainable development index into consideration.

Keywords: *Sustainable development index, Balkan countries, integration, EU, etc.*

Stimulation of Entrepreneurship, Support of Local Production

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Abstract

One of the main factors in the development of entrepreneurship, the revival of the economy and the creation of a favorable business environment is the business incubation process, which is considered the main infrastructure element of the innovation system.

Empirical methods of experiment and comparison were used in the dissertation work, and abstraction, analysis, synthesis, induction and deduction methods were used as theoretical methods.

Entrepreneurial activities provide new opportunities for the development of innovation entrepreneurship. Therefore, entrepreneurship has a direct impact on economic growth and provides the formation of intellectual power necessary for sustainable and sustainable development.

New directions for the economy have been formed in Azerbaijan. These directions include reducing dependence on imports, expanding the export of non-oil goods and services, accelerating the development of the non-oil processing industry, expanding business access to bank loans, increasing the economic efficiency of state investments, ensuring the dominant role of private investments, making small and medium-sized enterprises the main force of economic growth. Transformation, increasing transparency and minimizing the level of the "shadow economy". The initial results achieved on the way to new goals are positive.

Entrepreneurs should evaluate these opportunities well and direct funds to promising areas by conducting market research according to current conditions. Increasing the production of Azerbaijani products, reducing dependence on imports, producing exportable products, and creating new jobs are among the goals of our country in the medium term. Reducing dependence on imported products is also beneficial for entrepreneurs.

The creation of import-substituting and export-oriented local production gives a serious impetus to the employment of citizens.

The development of entrepreneurship means the development of the economy, business activity, and flexibility of business. The environment created for entrepreneurship is stable, transparent and fair. It depends on the activities of entrepreneurs to properly direct these tools, to achieve economic development and to create a beneficial business environment for reaching new goals.

Keywords: *economic growth, entrepreneurship, innovation, manufacturing industry, support for local production*

Improving Managerial Budgets Using Data Analytics

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Abstract

Modern businesses need to learn how to manage finances and in essence cope with the burgeoning demands on staff and their respective connections deemed necessary for catering to the needs of their respective customers. Owing to this, they do possess an escalating need to collate, appraise and interpret data at their disposal. Henceforth, there is demonstrated need for identifying suitable forms of data analytics for aiding and improving managerial budgets essentially.

The study will analyze the research data budgeting system consisting of revenue, expenses, and profit data. And as such will assess forms of data analysis including regression and time series analysis, and forecasting. Having done so, it will demonstrate key drivers of revenue, expenses and future business projections and business expenses collected from historical trends.

Anticipated results may include insights into the budgeting processed underpinned by contemporary data analytical methodologies; the identification of inefficient areas of budgeting; opportunities for improving business growth; and the provision of evidential based suggestions for enhancing budget optimization. In so doing a strategy for utilizing data analytics within the budgeting sector of business will be created.

Keywords: *budgeting, data analytics, forecasting, regression, time series, strategy*

A Descriptive and Comparative Analysis of The Happiness Index for Balkan Countries

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Abstract

This study's objective is to present the significance of the happiness index (which measures life satisfaction, the feeling of happiness, and other happiness domains: psychological well-being, health, time balance, community, social support, education, and arts), and its relationships to other significant parameters through a descriptive analysis, followed by a comparative analysis between Balkan nations using a global perspective approach, given the growing interest the world over in this topic.

The research's methodology involves gathering data and information about the happiness index globally, including the Balkan countries, handling a descriptive statistic for the index, conducting a comparative analysis of this index between the Balkan countries, and comparing the Balkan countries with the rest of the world on this topic.

The key suggestion is that policymakers should consider the happiness index as a significant criterion when determining the country's course toward EU integration and beyond.

Keywords: *happiness index, Balkan countries, integration, EU, etc.*

A Comparative Study of Hacking Tools for Android Devices

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Abstract

Nowadays we have an increase in the usage of the internet, smartphones and smart devices. This gives a higher demand on applications and especially on security levels. Users are sharing confidential and sensitive information of any kind in basically every app and electronic device. To prevent leaking of this information, security testing comes as a measure for it. Security testing provides a clear vulnerability of the system by checking the loopholes through ethical testing. In this research, security testing and penetration testing methods are used in order to test different hacking methods for android devices. The methodology adopts the current tools used by hackers, their descriptions and success rates. This is used for comparison and evaluation between the different methods. The metrics used to analyse and present the results are given. The four phases of reconnaissance, scanning, gaining access and executing the attack is given. This is all used to formulate some suggestions on how to prevent different attacking methods as the conclusion which consists of 14 steps. These 14 steps begin with the use of a firewall to software and hardware solutions but also including staff training in social engineering and personal staff security hygiene. In detail the steps cover: use of firewalls, antivirus software, updating patches, firmware and operating systems, using more secure operating systems, stronger passwords, regular staff training and monitoring.

Keywords: *Security Testing; Penetration Testing; Kali Linux; Genymotion; Android Emulator, Android*

Unleashing Economic Development: Models, Strategies, and the Path to Societal Advancement

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Abstract

The article "Unleashing Economic Development: Models, Strategies, and the Path to Societal Advancement" explores the complexities of economic development, which is widely recognized as a key driver of societal progress. It traces the historical evolution of economic development, highlighting the emergence of development economics as a scholarly field in the mid-21st century, coinciding with the reshaping of the global division of labor.

In the present-day context, the article emphasizes the crucial importance of economic development in fostering a healthy economic environment. It underscores the need to remove obstacles and create a conducive ecosystem for commercial activities, as advocated by Bloomington, Illinois Alderman Jamie Mathy. The ultimate goal is to establish a thriving business community that positively impacts the lives of residents and the overall dynamics of the city.

Additionally, the article provides a detailed explanation of the multifaceted nature of economic development. It identifies key indicators that measure progress, such as improved living standards, economic competitiveness, increased Gross Domestic Product (GDP) and Gross National Income (GNI), per capita human capital, and economic freedom. These metrics collectively serve as comprehensive measures of a nation's development and general well-being.

The article further highlights the significance of human capital in economic development. It encompasses investments in education, healthcare, scientific advancements, better labor conditions, and higher living standards. Recognizing its transformative power, the article underscores the pivotal role of human capital in driving economic growth and societal advancement.

Understanding the importance of economic development is crucial for societal progress, according to the article. It argues that efforts in this field benefit both society and businesses. By exploring various models and strategies, the article emphasizes the need to allocate resources to economic development. Ultimately, pursuing economic development can enhance quality of life, generate employment, stimulate sectoral growth, and provide long-term benefits to society.

Keywords: *Economic development; industrialized economies; economic growth; living standards*

Comparison between old and new Theorems Arzela and Alexandroff using exhaustive functions

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Abstract

The reason for starting this article was a relatively long article by Gregoriades and Papanastassiou, which focused on a type of convergence studied earlier, which is sometimes called continuous convergence or α -convergence for short.

This convergence had many applications thanks to a concept formulated by the authors themselves (of the family of exhaustive functions). In an attempt to understand this convergence, we were interested in the original meaning and noted that the authors relied on a statement found in Kelley's well-known book on topology. The statements about α -convergence held for compact sets could be reformulated with certain differences for locally compact spaces (spaces which are wider than compact ones). Many authors have tried to compare different convergences based on their speed of convergence and, among the classic results, we can mention: the comparison of uniform convergence with pointwise or compact open convergence, which is between them. The Arzela or Aleksandroff theorems are the most popular in this direction, which we will reformulate using locally uniform convergence or δ -convergence and we will add a third condition. We have tried to formulate approximate claims for stronger or weaker convergence with converged convergences. Since, as is known, a convergence creates a certain topology, we have attempted to formulate topologies for the two new convergences and give the analytical form of their topology base, which is a complicated issue when it comes to the function space in generally and persistently in particular.

Keywords: *Arzela, Alexandroff, δ -convergence, exhaustive functions, α -convergence, compact open convergence*

Six Sigma: Designing of a New Product for an ISO 9001 Certified Company

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Abstract

The prime motive of any business enterprise is to gain profit and achieve growth while providing the best quality to its customers. Six Sigma is a business management approach that enables companies to increase their net revenue by designing and tracking daily company processes in ways that limit waste and resources while boosting customer satisfaction. It consists of various strategies, techniques and tools that aim to improve the Total Quality Management of a company.

This paper discusses the phase and strategy of six sigma and analyses their relation with the requirements and guidelines of the of the ISO 9001 standard. Finally, we consider a case study of an ISO 9001-certified company which designs and produces computer monitors. We aim to investigate and explain the processes associated with the design of a new product for this company, considering both 9001 requirements as well as the design principles of the Six Sigma methodology. The design will be detailed at both the top management view and at the handoff level.

Keywords: *Quality engineering, Six Sigma, DMAIC process, ISO 9001 standard*

Risks and Legal Aspects about the Use of Artificial Intelligence in Academia: Case of Albania

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Abstract

The recent development of artificial intelligence (AI) has raised serious questions regarding the influence it may have in academic environments. The scientific community is split, some are optimist and some others very pessimistic. For instance, the optimist approach considers the AI as merely a tool which can assist the academics during the preliminary phase of the research (i.e. literature review, background information etc.). On the other hand, the critical voices consider the application of AI as a threat to the very foundations of academic research, namely critical thinking, primary data collection and data analysis. In addition, some say that the issue is more complicated and to follow a simplistic approach can only be risky and harmful to the concept of the role of technology in scientific research. Therefore, in some areas such as social sciences (i.e. law, sociology, economy, political studies), the use of AI may have some detrimental effects, but when it comes to the computer sciences, the risk seems almost minimal.

Moreover, Artificial Intelligence (AI) is considered as a potential threat to replace human academics in the future. While AI can be used to automate certain tasks and enhance academic research, it cannot replace human academics who bring critical thinking, creativity, and interpretation to their work. While AI algorithms are considered always unbiased and objective the ground truth is that AI algorithms are only as unbiased as the data they are trained on. If the data is biased or incomplete, the algorithm will reflect that bias. It is important to ensure that the data used to train AI algorithms is diverse and representative. One of the most critical aspects in the above discussion is the myth that AI can write research papers and essays. While AI can generate text, it is not capable of conducting original research or writing coherent and insightful arguments. AI-generated text is often repetitive and lacks the nuance and depth that human authors can provide.

Another major concern is that AI can grade papers and exams more accurately than humans, setting serious problems in peer review process or even in the students curricula examination processes. The ground truth, however, at this period of AI evolution is that while AI can grade papers and exams quickly, it is not always more accurate than human graders. AI algorithms can struggle with understanding the nuances of language and may miss important contextual information that human graders would pick up on.

This paper aims first at systematically present and discuss these and more issues related to the impact of AI in all stages of Academia operation.

Moreover, the above concerns are highly correlated with certain legal aspects. There are, therefore, several legal considerations when using AI in academia, including data privacy laws and intellectual property rights. It is important to ensure that data used to train AI models is collected and used ethically and in compliance with relevant laws and regulations. Additionally, the ownership and licensing of AI-generated intellectual property should be carefully considered and documented to avoid disputes in the future. This paper, therefore, will attempt to investigate whether the existing legal frameworks are suitable to cover all these emerging issues.

Considering that the discussion on the effects of AI in scientific research and academia is increasing, this paper will attempt to bring all current views together and elaborate them in the context of the Higher Education Academic Institutions functionalities as well as in the context of emerging scientific research communities such as the case of Albania. It will highlight areas of concern but it will also note the potential spaces where AI can assist emerging academic communities. The main objective of this research paper is therefore, to contribute to the developing discussion on AI with focus to its effects, potential risks and legal concerns on developing robust scientific and academic communities.

Keywords: *Artificial intelligence, Artificial intelligence challenges, Artificial Intelligence Risks, emerging scientific research, Academic Institutions operations, legal frameworks, Western Balkans, Albania.*

The impact of human capital on the sustainable development in MENA region: a panel quantile regression approach

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Abstract

The main goal of this paper is to assess the impact of human capital on sustainable economic growth in the case of MENA countries. Therefore, a panel data set has been collected from a sample of 15 MENA countries over the period 2000 - 2019.

We select three explicative variables: The Education index, Information and Communication Technologies and Sustainable Health System index. For the Education index we compute a composite index based on school enrollment levels: primary (% gross), secondary (% gross) and tertiary (% gross). For information and communication technologies variable we use as indicator: the percentage of individuals using the Internet (% of population). Concerning the sustainable health system, we compute the Index of Sustainable Healthcare (ISH) following the steps of Momete. D.C (2016).

In order to analyze the impact of human capital on the sustainable economic development we will use panel quantile regression (Machado and Silva, 2019). Following Wang et al., 2022, the authors choose to use as dependent variables three indicators of sustainable economic namely: the economic growth (% of GDP), the economic production sector (composite index compiled from the Agriculture, forestry, and fishing, value added (% of GDP) and the openness (composite index compiled from: Foreign direct investment, net inflows (% of GDP), Exports of goods and services (% of GDP) and Imports of goods and services (% of GDP)). Consequently, we will have three equations to estimate. Precisely, this methodology enables to analyze the multiple impacts of different human capital components on each pillar of sustainable economic growth, at different quantile levels, selected in this model.

The policymakers in considered MENA countries can find policy suggestions to promote the sustainable economic growth by focusing on the human capital components.

Keywords: *Sustainable Health System; Education; Sustainable development; Panel Quantile Regression; MENA.*

Enhancing Emotion Recognition in Children: A Transfer Learning Approach Using Wild Dataset for Automatic Facial Emotion Identification

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Abstract

Face expressions, which also communicate emotions, can be used to infer a person's goals and personality. Analysing and understanding facial expressions has long been a goal. Studies show that Facial Emotion Recognition deficit frequently contributes to clinical disorders like schizophrenia and bipolar disorder, as well as attachment issues, social anxiety, and other diseases. Like Adults, Children also encounter several difficulties in social engagement and communication, due to their limited or non-existent spoken language. Limited communication, social isolation, misunderstandings, dependency on others, difficulty in academic settings, emotional difficulties, and in some children delayed speech and language development are some of the issues that especially nonverbal children encounters. For Autistic, nonverbal or hearing impaired and other conditions among children, real-time facial expression can be a substitute and effective method in many areas. In this paper, we suggest a novel technique for identifying facial expressions for kids in real-time scenario. Convolution Neural Networks (CNN) are utilized to create a Facial Expression Recognition (FER) system. The suggested emotion detection system makes use of the transfer learning strategy from MobileNetV2 model. MobileNetV2 pretrained model, which is speedier and more accurate, has been used for classification of emotions by freezing its weights and adding some more layers after global pooling layer for attaining better accuracy. The three components that make up the expression recognition system are image pre-processing, feature extraction and feature classification. Anger, fear, happiness, neutrality, sadness, and surprise are among the six expressions which were identified on the dataset of kid's images created from wild. The experimental results show 95% accuracy on the test images.

Keywords: *Convolution Neural Network (CNN); Deep Learning (DL); Facial Emotion Recognition (FER)*

Economics of Corruption: Demand Side Case of Western Balkan Countries

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Abstract

For more than 30 years, Western Balkans have been in a period of transition, from a centralized system to a market economy. During this period these countries have undergone major political, economic and social transformations. Up to this day, these countries strategic objective have continued to be the accession to the European Union. Governments of these countries have applied policies that have given mixed results, with the aim of bringing them closer to Europe. Among other things, the fight against corruption seems to have been the focus of the activity of all governments. Corruption is a very negative phenomenon, which distorts the market and harms economic growth. Corruption has its side of supply and demand. Both supply and demand for corruption are influenced by many factors. The purpose of this article is to identify the main factors that lead to the demand for corruption. The Transparency International score was used as a measure of corruption. Real per capita income, inequality gap, unemployment rate, and political stability and absence of violence have been used as independent variables affecting corruption. The study covers the period from 2004 - 2022. The identification of the factors can serve the governments of these countries to design policies that will reduce the involvement of people in corrupted practices.

Keywords: *Corruption; Demand; Government Policies.*

The impact of digitalization on profitability of companies. A company-level research

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Abstract

In recent years, digitalization has emerged as a significant factor reshaping the world of business. The purpose of this study is to look at how digitalization affects each individual company's profitability. We investigate the link between digitization and profitability while taking into account the possible impact of the size of the firm using a multiple regression analysis technique. The network readiness index, the natural logarithm of the company's assets, and the debt-to-equity ratio are three important independent variables that are included in our research, which is based on a sample of 10 firms.

The results offer compelling new understandings of the connection between profitability and digitization. Firstly, our findings show a strong correlation between efficiency and digitalization, suggesting that as businesses get more digitally integrated, their profitability tends to rise. According to this research, adopting digital technology and developing digital skills may increase a company's profitability.

Furthermore, our data shows that the association between digitization and profitability is not considerably moderated by the size of the company. This result implies that, regardless of the company's size, the impact of digitalization on profitability is constant. Digitalization may thus help businesses of all sizes and industries because its impact on profitability is not dependent on the size of the company.

By offering concrete data at the corporate level, this study adds to the expanding body of literature on digitalization and profitability. The findings highlight how crucial it is for businesses to deliberately engage in digitization projects in order to increase their profitability. These insights may be used by managers, policymakers, and practitioners to create policies that make the most of digital possibilities and boost financial performance.

Keywords: *Digitalization, Profitability, Company-level Research, Multiple Regression Analysis, Network Readiness Index*

The Impact of Artificial Intelligence in Education

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Abstract

The education sector is very important and we need to change the way we learn and the methodologies we are using. In recent years, especially after the pandemic, there has been an increasing tendency in higher education to integrate recent technologies and artificial intelligence as a means to enhance the educational process.

In this study we will analyze the impact of AI in Education and how can we adapt to the transformation of technology. Despite the numerous advantages that technology has conferred upon education, there exist apprehensions regarding its influence on institutions of higher education. All the advantages and disadvantages will be mentioned and analyzed with higher emphasis. Many traditional academic institutions are worried about the future. AI will transform education in the coming decades.

Consequently, in the forthcoming years, higher education institutions necessitate assistance to keep pace with the swift technological advancements and are actively exploring diverse strategies to adapt and maintain relevance within the digital era. With the right compass we have to find the right path to maximize the benefits of AI on Education and minimize time consuming.

Keywords: *Artificial Intelligence, higher Education, online Education, technology etc.*

The Geotechnological Contention between the USA and China in the framework of the digital economy

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Abstract

The global competitiveness of countries, increasingly in the digitalization environment, economically for technology is associated with many variables. Global competitiveness; human capital, innovation capacity, and technology interaction with qualifications such as development, and technology level. In this sense, the struggle for global hegemony between the USA and China finds its most severe reflection on the axis of technology. At the same time, in the face of the rapidly increasing power of technology companies, both countries are following an effort to take regulatory and restraining steps in the economy. Although the economic problems experienced in the post-pandemic period caused pauses in all areas of political relations in the world, it can be said that technological developments have passed tangentially. Traditional geopolitical and economic components of the conflict that are connected with high technology are now considered as a strategic resource and a separate area of conflict due to the significance of information and communication technologies (ICT) and the growth of the digital economy. The prominence of digital technology in international politics is increasing due to classic (geo)political reasons, such as the politicization of the digital domain, boosted by stories of fresh technological revolutions. This trend is analyzed as a reverse trading method. Due to the perception that competition in high-tech markets is a zero-sum game, these variables make the Tech War more intense. Thus, the fierce competition in the relations between the USA and China has provided a significant impetus to international technological developments within the framework of the post-pandemic digital economy. The objectives and long-term repercussions of the US-Chinese competition in the digital economy, which advances with technological progress, are examined in this article, along with the political ramifications of the recent academic literature and the quantitative and qualitative research data in the digital environment are examined.

Keywords: *Digitalization; economy; technology; USA; China*

The Challenges and Impacts of Artificial Intelligence and 4th Industrial Revolution Technologies on the Economic Growth in Western Balkan Countries

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Abstract

There is increasing discussion on the impacts of Artificial Intelligence and the 4th Industrial revolution in the growth of modern societies. The most obvious impact is the increased productivity and efficiency due to the potentials of AI and 4th industrial revolution underlying technologies to automate repetitive and labor-intensive tasks, allowing for increased efficiency and productivity in various industries, leading to economic growth. A second issue is the potential of AI to help identify new opportunities and solutions to problems, leading to innovation and development of new products and services

as well as leading to improved decision-making, since AI can analyse large amounts of data and provide insights that can aid in decision processes, leading to better outcomes and economic growth.

Although the potentials are huge, however, there are certain challenges in emerging economies. First of all, emerging economies suffer from the lack of necessary infrastructure and resources to support the development and deployment of AI and 4th industrial revolution technologies, limiting their potential benefits.

Moreover, the skills gap of emerging economies, that is, the shortage of skilled workers capable of developing and deploying AI technologies, is seriously limiting the ability of emerging economies to fully leverage the potential of AI. In addition, ethical concerns should not be considered out of this discussion since the use of AI raises ethical questions related to privacy, bias, and the potential for AI to replace human jobs, which can have negative economic impacts. Job displacement is another critical issue to be considered since AI and 4th industrial revolution technologies have the potential to automate many jobs, leading to job displacement and unemployment in the short term, although it can also create new jobs in the long term.

Moreover, economic inequality is a potential significant negative impact since AI can exacerbate economic inequality if the benefits of AI are concentrated in the hands of a few individuals or companies. On the other hand, increased competitiveness is a very positive impact in developing economies since AI can help emerging economies become more competitive on the global stage by increasing productivity, efficiency, and innovation.

This research aims, therefore, to investigate the above major and other issues regarding the impacts of AI and 4th industrial revolution technologies on economic growth in emerging economies, focusing in the economies of Western Balkan countries, involving current available data critical presentation. Moreover, it aims at outlining all important factors, including access to infrastructure and resources, the availability of skilled workers, and the ability to address ethical concerns related to AI and 4th industrial revolution technologies concerning Western Balkan countries. With the right policies and investments, Western Balkan economies can leverage the potential of AI to drive economic growth and development and this research paper will attempt to preliminarily quantify these issues as much as the available data allow.

Keywords: *Artificial Intelligence; AI and 4th Industrial revolution in emerging economies; Economic Growth; Western Balkans.*

Ethical Issues in Scientific Research

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Abstract

Ethics and science have a complex and intertwined relationship, with ethical considerations playing a vital role in scientific research. Scientific research plays a crucial role in advancing our understanding of the world around us. However, the pursuit of knowledge also raises important ethical concerns, and these issues must be addressed in a timely and appropriate manner. This article aims to provide an overview of some of the most common ethical issues that can arise in scientific research, including research misconduct, simultaneous submission, plagiarism, and authorship. We will also discuss the potential consequences of ethical violations and highlight best practices for promoting ethical research conduct, including establishing clear guidelines, fostering a culture of transparency and accountability, and promoting open communication and collaboration among researchers. The article argues that by upholding ethical standards, researchers can promote trust and credibility in science, and help ensure that scientific research serves the public good. Ultimately, ethical considerations must be integrated into scientific research practices to ensure that research is both scientifically rigorous and socially responsible.

Keywords: *ethics, science, scientific research, research misconduct, simultaneous submission, plagiarism, authorship.*

Assessing Global Innovation Index: A Comprehensive Analysis of its Metrics, Methodology, and Implications

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Abstract

The Global Innovation Index (GII) is a crucial instrument for evaluating and tracking innovation performance on a worldwide scale. This research article comprehensively reviews the GII's metrics, methods, and implications. The study's objective is to increase our knowledge of the GII and how it supports innovation-driven economic development.

The paper's introductory paragraphs explain the key components of the GII, including the inputs and outputs that support the innovation ecosystem. It looks at the many indicators used to gauge innovation, such as human capital, R&D expenditure, infrastructure, and market sophistication. The benefits and drawbacks of the GII metrics are examined in this study.

Furthermore, the research delves into the methodology employed in constructing the GII, exploring the data collection process, weighting scheme, and aggregation techniques. This analysis provides insights into the index's reliability, validity, and comparability across countries and regions.

The implications of the GII are then discussed, focusing on its significance for policymakers, businesses, and researchers. The paper explores how the GII can serve as a diagnostic tool, helping governments identify strengths, weaknesses, and areas of improvement in their national innovation systems. Additionally, it examines how the GII can inform strategic decision-making for businesses seeking to invest in innovation-intensive sectors or expand their global reach.

Finally, the research paper concludes by highlighting potential avenues for future research, including the refinement of the GII metrics, the inclusion of emerging technologies, and the examination of the index's relationship with economic outcomes. By providing a comprehensive analysis of the GII, this research paper aims to contribute to the ongoing discourse on innovation measurement and policy formulation, ultimately fostering an environment conducive to sustainable economic growth and prosperity.

Keywords: *Global Innovation Index, economic development, policymakers, emerging technologies.*

The Effect of Investment Decisions on Firms' Profitability (Empirical Study on Listed Companies)

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Abstract

The primary goal of the most of businesses is to generate a profit or return. Investment choices are crucial for the company since they often determine its worth through affecting profitability. Especially investments made on cryptocurrency is very famous nowadays. This study aims to provide a greater understanding about investment decisions and how they relate to business profitability so firms can make more intelligent judgments. The paper demonstrates a correlation between investment decisions, as indicated by asset growth, financial leverage, liquidity and business profitability. In the first section of the paper, comprehensive information and importance of them is given about variables used in the research. After that previous studies related to the topic are deeply analyzed and conclusions from those are indicated for further reference. In the last section the paper econometric models are used to determine the relationship between variables. In the data analysis part statistical findings pertaining to financial leverage and profitability are displayed. The findings of this study have important policy implications for firms. The study discovered that performance improved with higher investment decision, and financial leverage. In order to maximize profitability, the study advises corporate managers to allow for new opportunities in order to be more innovative, which will lead to new investments and higher financial leverage - in particular. In order to boost performance as indicated by return on equity, management of listed companies is advised to pursue a conservative financing strategy by focusing on financing assets more frequently with long-term liabilities. This is because the study shows that, in contrast to the use of short-term financing, the use of greater long-term financing increases the return on equity.

Keywords: *investment, financial leverage, liquidity, performance, profitability*

Sarajevo Parking System

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Abstract

Modern cities in Europe and the World face many challenges that are caused by growth, both economic and population. To overcome these challenges it is necessary to integrate advanced technologies into our cities, as well as wider society, through process of digital transformations that will lead to evolution of the better, smart cities. One challenge that is encountered by Sarajevo, capital and largest city in Bosnia and Herzegovina is lack of available parking space. Possible solution to this problem is considered in this paper. The implemented solution of the issue requires the development of a well-integrated Application Programming Interface, that will be connected to the sensors installed at the parking spaces. Furthermore, the solution includes a mobile application that will communicate with the API and allow the users of the application to gain insight relating to the car-parks that are implementing sensors and are registered to the API, in particular the users will be able to view exact location of the car-park, and get instructions on how to reach a particular car-park. Furthermore, the users will be able to see number of available parking spaces at particular car-park, place reservation for a parking space, as well as pay for the parking services through the mobile application. This paper posits that this solution will allow drivers, and parking users, to find parking space more easily, thus reducing time spent in vehicle searching for suitable parking, and thus increase their productivity and improve their overall experience of driving in urban areas, as well as facilitation of transactions between parking users and parking operators. The implementation of this system has the potential to improve monitoring and manageability of parking spaces which in turn may vastly improve parking availability in Sarajevo.

Keywords: *Smart Cities, Digital Transformation, Traffic, Parking, Congestion, Software*

The Relationship Between Entrepreneurship, Innovation and Economic Growth

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Abstract

The discipline of entrepreneurship and its relationship to innovation and economic growth have been extensively studied in the academic literature. However, the majority of research has focused on developed nations, leaving a gap in understanding the context of newly industrialized nations. This thesis aims to investigate the connection between innovation, entrepreneurship, and economic growth in Azerbaijan, a newly industrialized country facing challenges such as high unemployment rates and heavy reliance on the oil and gas sector. The specific focus is on the implications of small and medium-sized enterprises (SMEs) for employment and non-oil exports. The research project utilizes a quantitative research methodology and draws on secondary data from sources such as the World Bank, Azerbaijan State Statistics Committee, and SME annual reports. Various indicators related to entrepreneurship, innovation, and economic expansion are analysed, including the share of SMEs in the economy, employment in SMEs, SME investments, R&D costs, and the number of trademarks and patent applications. Multiple and single regression analyses are employed to examine the relationship between entrepreneurship, innovation, and economic growth, with GDP as the dependent variable. The findings reveal that innovation and entrepreneurship play a crucial role in Azerbaijan's economic growth. The data indicates a significant increase in the contribution of SMEs to non-oil exports, rising from 36% in 2016 to 52% in 2019. Despite a decline in the share of SMEs in GDP during 2018-2019, there was a substantial increase in the proportion of employment held by SMEs. The output produced by SMEs also showed consistent growth, highlighting their importance in supporting overall economic development. Regression analysis indicates a significant relationship between registered trademarks, non-resident trademarks, R&D expenditures, and GDP. However, no significant relationship was found for resident patents. The study concludes that innovation and entrepreneurship have a positive impact on economic growth in Azerbaijan, contributing to increased employment rates and non-oil exports. It suggests that the government should provide further support and funding to foster an entrepreneurial and innovative culture, focusing on enhancing the investment environment, protecting intellectual property rights, and investing in human resources. To achieve long-term economic growth, sustained efforts are required to nurture a conducive environment for entrepreneurship and innovation in Azerbaijan.

Keywords: *small and medium sized enterprises, patents, trademarks, R&D expenditures, economic growth*

Adapting Higher Education Institutions for Teaching and Learning in Future Pandemic Situations

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Abstract

The outbreak of the COVID-19 pandemic has highlighted the critical need for higher education institutions to be prepared for teaching and learning in future pandemic situations. It need to explore strategies and best practices for preparing universities to effectively navigate the challenges posed by pandemics and ensure the continuity of education. It examines the key areas of focus, including technological infrastructure, pedagogical approaches, assessment methods, student support, and community engagement. The article presents the importance of establishing a robust technological infrastructure that supports remote and blended learning. It highlights the need for adequate digital resources, reliable internet connectivity, and user-friendly platforms that enable seamless communication, content delivery, and collaboration. Furthermore, it emphasizes the significance of providing comprehensive professional development and training for faculty members to effectively utilize technology and adapt their pedagogical practices to remote or blended learning environments.

The role of curriculum adaptation is explored, emphasizing the need to prioritize essential learning objectives and identify appropriate digital resources that align with remote or blended learning modalities. the article presents flexible assessment methods, including online quizzes, projects, and portfolios, that can accurately measure student learning in a remote context. It underscores the importance of clear communication channels and regular feedback mechanisms to ensure effective communication between students, faculty, and support staff.

Preparing universities for teaching and learning in future pandemic situations requires a proactive and comprehensive approach. By focusing on technological infrastructure, pedagogical adaptation, assessment methods, student support, and community engagement, higher education institutions can effectively navigate the challenges of pandemics and ensure the continuity of education. The lessons learned from the COVID-19 pandemic provide valuable insights and serve as a foundation for building resilient and adaptable educational systems in the face of future uncertainties

Keywords: *remote and blended learning, platforms, digital resources, pedagogical adaptation, technology*

Audio Video Bridging (AVB) Protocol for Transmission of Low Latency Multimedia Data over Distributed System Networks

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Abstract

Computer networks have changed our lives by presenting the internet as a giant information source. Another dimension of life which has been affected by computer networks is the information flow. Distributed real time systems have been used in different industries including automotive industry, aviation industry, industrial process control, etc. Some real time distributed systems have to deal with time sensitive data and this time constraint and limited network resources force us to classify the data based on their priority. In other words, we need to transmit the urgent data before the less urgent data. Ethernet LANs can use a variety of different protocols to transmit time sensitive data in real time distributed systems. One of these protocols is Audio Video Bridging (AVB) which is used in different industries such as automotive industry or audio networking and music industry. AVB achieves data flow classification and prioritization by dividing data into two real-time Stream Reservation (SR) Classes: Stream Reservation Class A and B. Each of these classes have a so-called “*credit*” parameter. AVB uses Credit-Based Shaper (CBS) algorithm to manage these classes based on credit parameters. Credit parameters for SR class A and B changes within the upper limit which is called “hiCredit” and lower limit which is called “loCredit”. CBS algorithm prioritizes data flow based on the credit parameter. In this paper we are going to look at the AVB protocol and discover how it can be used to transmit time-synchronized low-latency time sensitive multimedia data over the distributed systems network.

Keywords: *AVB; TSN; AV; Distributed Systems; Real Time*

Optimization of Stock Portfolio Based on Markowitz Model (Empirical Study on Listed Companies)

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Abstract

Today, businesses operating in both developed and developing economies strive to increase their profits while exhibiting continuous and stable growth. It should be noted that investment must increase to ensure growth, and the relationship between savings and investment is reciprocal. This demand for investments makes the topic of the dissertation work relevant. The main goal of the dissertation work is to compare the portfolio results created by the Mean-Variance model with the portfolio results created according to subjective criteria. The main research methods - analysis, comparative-analytical analysis, statistical analysis, evaluation and other methods were used in the preparation of the dissertation work. The data to be used within the framework of the study are the ten cryptocurrencies with the highest annual rate of return on the New York Stock Exchange as of 03/31/2022 and 03/31/2023, and ten additionally exposed to them, in order to include high market representation and forward-looking stock portfolios selected from among the remaining non-cryptocurrency company stocks. The main limitation of the dissertation work is that since the obtained results are calculated on the basis of past period returns, the study does not mean that these indicators will continue at the same level in the future. The novelty of the research involves the optimization of portfolios to maximize the expected return of the portfolio, taking into account a certain level of risk, which is evaluated according to the variation of the portfolio, or to minimize the volatility of the portfolio, taking into account a certain expected return, and also includes the construction of suitable portfolios for investors. The results of the research, as well as the main propositions and proposed proposals, can be used by investors when creating an optimal portfolio, as well as in future research on the subject of the study and in the teaching process of the "Financial Management" course.

Keywords: *portfolio optimization, mean-variance model, return, risk, volatility*

Highly Accurate Tumor Classification Using Alexnet Method for Personalized Cancer Diagnosis and Treatment

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Abstract

Tumor classification is a critical task in cancer diagnosis and treatment planning. Accurate classification of tumors can aid in selecting the most effective treatment options for patients. In this study, we used the Alexnet method to classify tumors with high accuracy.

Our study included a dataset of tumor images from various sources. We used the Alexnet method to train our model on the dataset, which included convolutional and pooling layers, as well as fully connected layers for classification. The model was trained on a GPU for several hours, and we achieved an accuracy of more than 98%.

Our results indicate that the Alexnet method is a powerful tool for tumor classification. It can accurately differentiate between different types of tumors based on their visual characteristics. This can aid in the development of personalized treatment plans for cancer patients, which can ultimately improve patient outcomes.

In conclusion, our study demonstrates the effectiveness of using the Alexnet method for tumor classification. It is a promising approach that can be applied in clinical settings to improve cancer diagnosis and treatment. The high accuracy achieved in our study highlights the potential of machine learning techniques in cancer research and treatment. Further research is needed to explore the potential of this approach in clinical practice.

Keywords: *Tumor classification, Alexnet, Accuracy, Cancer diagnosis, Personalized treatment*

Economic growth in Azerbaijan and factors that contribute to it

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Abstract

One of the macro economic objectives of a country is to achieve economic growth and this research paper examines the factors that contribute to economic growth in Azerbaijan. There are some indicators that represent the growth rate of economy in the country. The most informative of these indicators is gross domestic product (GDP). In turn, there are a number of parameters that affect the level of GDP. This paper summarizes those parameters that have crucial influence on the level of GDP and overall economy. Those factors have been analyzed on the year by year basis and their impact on the total economic growth has been determined.

Keywords: *GDP, Azerbaijan, Economic Growth, non-oil sectors, oil sectors*

Audit Competition and Quality: Case of Big4: 2017-2022

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Abstract

The most profound cause of the existence of audit is the Information Asymmetry in a different perspective. One of the most known is the agency problem between shareholders and management team. In addition, another reason why the audit is so important is the great effect in financial markets and economy by taking wrong decisions.

The base of the present economy is TRUST and CONFIDENCE, and auditors are in the position of protecting this unique general-accepted principle through high audit quality. There are two ways how to provide high audit quality:

Firstly, the existence of an independent and determined regulator and regular monitor of exercise and pursuit of these standards. People occasionally tend to focus only in pursuit of standards, but in our opinion is not enough due to during the time standards become obsolete/inappropriate. Therefore, a certain body should continuously update standards. Sikka (2009) said that BIG4 used the crisis to enlarge their earnings, explaining that the continuous intervention of regulators was required.

Secondly, which is the most crucial point is the existence of a competitive market de jure and de facto. According to Adam Smith (1776), the invisible hand of the economy is formed by self-interest and de facto competition, which together are the engine of the economy.

We have analysed by ourselves some secondary data taken from three different sources data collection to build up a framework for the audit market competition and its impact on the audit quality. We have identified the key reports of the most important regulators regarding the audit industry together with the discussion tables with the market participants such are the biggest audit corporates in the world. We have obtained the methodology and related findings of Oxera, Competition and Market Authority, and Financial Reporting Council (FRC) respectively.

Oxera is an experienced organization, which provides advisory for governments and firms for competition, regulation, and finance. Oxera published a report in 2018 due to the audit quality was decreased among BIG4 according to FRC (2017). This was validated by further opinions of BIG4 in the following years up to 2022.

Competition and Market Authority (CMA) is the competition regulator in United Kingdom. It has published its 5-year report (2018) where it has published some issues, which are considered both problematic and contentious regarding audit competition and consequently impact on the audit quality. This report suggested separation of Non-Audit Services (NAS) from audit services, heavily fines for poor audit quality and more involvement of regulators

In October 2018, the FRC published a 5-year inspection report about the audit market in the UK. We shall analyse the most crucial points. CMA have published its remedies, which we have interpreted by giving our, BIG4 and CMA viewpoint.

Overall, we expect to conclude that there are problems of quality and competition in the audit market. The Big4 firms justify the market concentration with the fact that they have the capacity and technology to cope with the largest companies in the world. Challenger firms have the ability to be undertake big audits if they are given the opportunity.

Evaluating the Efficacy and Adoption of Online Educational Technologies during the COVID-19 Pandemic

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Abstract

The COVID-19 epidemic has initiated a fundamental paradigm shift in education that has accelerated the move to digitalization and use of online learning platforms. This study aims to assess the effectiveness and rate of adoption of various online educational technologies during this period. We have used the triangulation research methodology which combines qualitative and quantitative design, and we investigated the usability, accessibility, pedagogical effectiveness, and widespread acceptance of these digital tools among educators and students. Information was gathered from instructors, students, and educational administrators, in a number of different professions, through online questionnaires and focus groups. The study's findings offer important new information about the advantages and disadvantages of the online learning resources used during the epidemic, as well as about the difficulties they presented for users and the effects they had on teaching and learning outcomes. This study also emphasizes the issues raised regarding technological assistance, teacher professional development, and policy changes in order to increase the efficiency of online learning settings. The findings have important implications for upcoming online learning initiatives, particularly in terms of crisis management and long-term educational planning.

Keywords: *Online education, COVID-19 pandemic, technology adoption, e-learning efficacy, digital pedagogy*

Driving Sustainable Economic Development: Implementing Innovations in the Digital Economy

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Abstract

In the contemporary dynamic global context, the incorporation of novel advancements within the digital economy has assumed a pivotal role as a catalyst for sustainable economic progress. This scholarly article extensively investigates the intricate landscape of digital innovations and examines their assimilation in facilitating economic expansion while effectively tackling urgent environmental and societal issues. By effectively harnessing the transformative capabilities of state-of-the-art technologies, including artificial intelligence, blockchain, cloud computing, and the Internet of Things, diverse stakeholders such as enterprises, governments, and communities can establish a robust and all-encompassing digital economy that promotes the attainment of sustainable development objectives.

The implementation of digital innovations facilitates amplified efficiency, productivity, and optimal resource utilization across a wide range of industries. Intelligent manufacturing systems driven by automation, robotics, and data analytics streamline production processes, leading to decreased wastage and energy usage. Furthermore, digital platforms and e-commerce solutions afford previously unseen market opportunities for small and medium-sized enterprises, instigating entrepreneurial activities and enhancing economic empowerment. These advancements serve as catalysts for job creation, income generation, and the mitigation of poverty, thereby nurturing an inclusive and sustainable framework for economic development.

Nevertheless, the effective execution of digital innovations requires the diligent consideration and resolution of inherent challenges and potential risks. Safeguarding data privacy and implementing robust cybersecurity measures assume paramount significance to uphold public confidence in digital systems. Additionally, the imperative of bridging the digital divide and cultivating digital literacy across all societal strata becomes crucial in nurturing an inclusive framework for economic development. The collaborative endeavors among governments, private sector entities, and civil society organizations are essential in establishing an enabling milieu that fosters innovation, reinforces the development of digital infrastructure, and provides comprehensive training programs to enhance digital skills.

Keywords: *Digital economy; digital innovations; sustainable economic progress; economic expansion*

A Comparative Analysis of Information Communication Technologies Development: A Study of Azerbaijan and Selected Balkan Nations

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Abstract

The development of information and communication technologies (ICTs) plays a pivotal role in promoting overall technological progress in a nation and enabling transformative changes in various sectors. By providing a solid foundation for digital infrastructure, ICTs facilitate innovation, increase productivity, and spur economic growth, placing a nation at the forefront of the global technological landscape. The main objective of this study is to compare Azerbaijan's ICT development with that of selected Balkan countries. The growing cooperation between Azerbaijan and the Balkan countries is primarily focused on the energy sector, but there is limited understanding of the technological similarities and differences. To further enhance this cooperation, a comprehensive study of the technological infrastructure and the identification of areas of convergence and divergence are essential. This study will facilitate informed decision-making, pave the way for expanded cooperation in various sectors beyond the energy sector, and promote mutually beneficial relations between Azerbaijan and the Balkan countries. The results of this study, based on hierarchical cluster analysis (HCA), show that Azerbaijan is similar to Balkan countries such as Albania, North Macedonia, and Bosnia and Herzegovina when calculating the average values (between 2010 and 2020) for various ICT variables (e.g., 4G coverage, Internet connections). The HCA of the last year, like 2020, shows the same picture. This means that there are some similar patterns of ICT usage and investment in these countries. The results highlight the potential for cooperation and knowledge sharing between Azerbaijan and the Balkan countries in the field of ICT, as they can learn from each other's experiences and work together to further improve their respective ICT sectors.

Keywords: *Azerbaijani economy, Balkan countries, hierarchical cluster analysis, information communication technologies, technological change.*

An Exploration of Data Encryption Standard (DES)

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Abstract

DES has been serving as the official federal standard for data encryption since the 1970s until it was replaced in 2001 by the Advanced Encryption Standard (AES). This paper thoroughly examines the encryption and decryption procedure, describing in detail and illustrating each step of the process. We also discuss the CrypTool implementation, fully functional for both encryption and decryption, and utilize it to visualize all the stages of processing the plaintext goes through to generate the ciphertext. Furthermore, we present a brief history of attempts at breaking the DES cipher, starting since its approval as a standard up to more recent developments.

Keywords: *data encryption standard, block cipher, Feistel scheme, substitution permutation network*

Accounting of inventories in service sphere enterprises based on modern technologies and its positive effects

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Abstract

In the dynamic landscape of service-sphere enterprises, accurate and transparent financial and management reporting plays a crucial role in assessing the company's performance and making informed business decisions. One essential aspect of these reports is the reflection of accounting information related to reserves. Reserves act as a safety net, allowing businesses to mitigate risks, fulfill obligations, and invest in future growth. This article aims to explore the significance of improving the reflection of accounting information of reserves in financial and management reports in service-sphere enterprises and highlights strategies to achieve this objective effectively. Accurate and transparent financial and management reporting is essential for service-sphere enterprises to evaluate their performance, monitor costs, and make informed business decisions. Among the crucial elements of these reports is the reflection of accounting information related to inventory. Inventory represents a significant asset for service-based organizations, and effectively capturing its accounting information is crucial for assessing profitability, managing costs, and optimizing operations. Accurate reflection of inventory in financial reports is crucial for service-sphere enterprises as it provides valuable insights into the organization's financial health and operational efficiency. By disclosing inventory-related information, such as valuation methods, carrying costs, and turnover ratios, financial reports facilitate decision-making for investors, creditors, and other stakeholders. Transparent reporting of inventory also enhances the credibility of financial statements, promoting trust and confidence in the organization's financial position. In this article, we will talk about ways to further improve inventory accounting in service enterprises using modern methods and modern technologies.

Keywords: *accounting, inventory, finance, costs, assets, management*

The Implementation of Artificial Intelligence in Signal Processing

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Abstract

There exist many challenges with Signal Processing (SP) in communication systems, such as: stability, multi-dimensional processing, filtering etc. Many hardware and software resources are required to cope with these growing complexity problems in the near future. The application of AI (Artificial Intelligence) algorithms offers a promising solution. AI is already being applied to solve many engineering and scientific problems including its utilization in SP and Digital Signal Processing (DSP).

The methodology of the research began with exploring the most commonly used algorithms in SP such as supervised learning algorithms: Artificial Neural Networks (ANN), Convolutional Neural Networks (CNN) and Recurrent Neural Networks. Unsupervised learning algorithms commonly used were also investigated including: Sparse Auto-encoder, Deep Auto-encoder, Convolutional Auto-encoder as well as Deep Reinforcement Learning algorithms such as Deep Q Learning and Deep Temporal Difference Learning.

The benefits accruing from their use was ascertained, specifically looking for their utilisation in an intelligent, scalable and secure communication system.

The likely conclusion of the work will be to confirm that using specifically identified AI algorithms for SP in communication systems will make them more scalable, so they will avoid becoming overloaded and reaching their breaking point. The use of AI will also make communication systems less expensive, agile and far more intelligent. The communication channels will be more secured with AI SP and aid in its increased robustness, quality and error recovery compared with using traditional non-AI SP. Because of all of these perceived benefits, there will be a greater shift toward using new methods in SP such as the Advantage Actor Critic algorithm and the Trust Region Policy Gradient Algorithm.

Keywords: *Signal Processing; Artificial Intelligence; Supervised Learning algorithms; Unsupervised Learning algorithms; Reinforcement Learning algorithms*

Multidisciplinary Approaches to Digitalization and Economic Growth: Sustainable development

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Abstract

As a first approach and for the better understanding of the topic, a proper definition of the concept of sustainable development is considered to be needed in order to begin with a purposeful explanation. This research paper aims to show another viewpoint to the approach of sustainability, by conducting a thorough analysis starting from the very beginning with its origin and some key information regarding its historical development up to our days, as well as its importance in our efforts through trial and error to achieve a global well-being of both the present and the future generations. Most importantly, the three pillars of sustainability will be analysed at the levels of environment, society and economic growth. This article's purpose is to give the reader a full understanding of the sustainable development as a term used to meet the 17 ambitious goals of the 2030 Agenda, the Sustainable Development Goals, known also as the ``Global Goals``. Through this paper the author intends to give further explanation of the abovementioned goals in order to achieve better comprehension of the importance of this set of points. In the research will furthermore be taken into account the link between sustainability and resilience, both concerning many disciplines, starting from the economy, social sciences, psychology, politics, science and research, as well as architecture, urban planning and design fields. Given statistics will support the information in order to achieve greater reliability and cohesion. Later on, will be analysed the most essential elements that will help mankind to live and share the same opportunities without compromising the needs of the future generations. The paper will focus on the remarkable benefits of reflection, resourcefulness, flexibility, inclusiveness and lastly but not least important integration of individuals and institutions. At the end of this analysis, a clear view of the mindset of the author regarding the importance of decision making and promotion of sustainability in relation to socio-economic, political and environmental domains will be given.

Keywords: *Sustainable development, historical development, pillars of sustainability, environment, society, economic growth, Sustainable Development Goals, resilience, reflection, resourcefulness, flexibility, inclusiveness, integration, mindset, promotion*

The Advent of Amazon Web Services (AWS)

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Abstract

This paper gives an overview of the features, functionalities and services offered by one of the biggest cloud computing platforms, Amazon Web Services, or more popularly known as “AWS”.

The features of AWS concerning security, scalability, infrastructure and availability will be covered at the system level. Real-world examples and service benefits are also discussed covering: pay-as-go model, massive economies of scale and “stop guessing capacity”. The agility of AWS will also be covered. The paper concludes with the possible future direction of AWS which is the amalgamation of over 100 AWS services and the provision of Clean Rooms.

Keywords: *AWS, Amazon Web Services, Security, Cloud Computing*

Effective mining of customer review through sentiment analysis based on RoBERTa Transformer

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ASM Ashraf Mahmud

Volkan Tunali

Abstract

The unstructured text data is a significant challenge with increased customer product reviews. Customers are relying more and more on product reviews to buy a product. Product ratings assist them in choosing the right product. Businesses are using star ratings to attract and retain customers. Currently, it is so vital to process customers' input written in a text format.

This paper investigates this issue and finds a better solution to classify product reviews through sentiment analysis. This research used advanced mining techniques RoBERTa transformer which is a method to predict the ratings of items that are sold online. Review polarity would be determined through the assistance of sentiment analysis. To classify the text Naïve Bayes classifier was used along with the RoBERTa transformer which is the rigorous enhancement of Bidirectional Encoder Representations from Transformers (BERT). It is a Natural Language Processing (NLP) Machine Learning (ML) model.

This research investigates the sentiment analysis by using the RoBERTa transformer and received significant results with 88% accuracy to predict customer satisfaction. The strategy is devised to determine user evaluations which are crucial to the e-commerce business. The current state of art NLP model demonstrated the promising result and remove the complexity of any language. This research also evaluated how transformer competes with the deep learning models. Performance shows it is a significantly improved model.

Keywords: *RoBERTa, Naïve Bayes, e-commerce, NLP.*

Ways of Rational Management of Food Industry Waste and Circular Economy

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Abstract

It is known that the food industry is one of the main industries in the world. This industry is of great importance to many national economies. It should be noted that, from a statistical point of view, the increase in the number of people in the world and the corresponding rapid increase in the demands of the food supply chain will result in a significant increase in the production of food products in the next 50 years. For these reasons, there is a large increase in the amount of food industry waste and, as a result, negative effects on the environment. In the information provided by the International Food and Agriculture Organization to the mass media, it is noted that, on average, 1/3 of the food industry products intended for human consumption on a global scale are lost or wasted. Considering the statistical number of hungry people increasing day by day and the limited natural resources, it is not difficult to understand that rational food waste management systems will become one of the most important problems of the present time.

The food processing industry produces large amounts of food waste that is considered inedible every day. Landfilling and incineration are not considered alternatives as optimal approaches for a rational food industry waste management system. So, this option is not considered as a promising way for environmental sustainability and economic efficiency. It should be noted that recycling and reuse are considered the main principles of the circular economy, which focuses on energy and also resource recovery from food industry waste for sustainable ecology. The composition of food industry waste consists of rich organic substances such as carbohydrates, proteins and lipids. Thus, these wastes can be used as feed stock by adapting to appropriate technologies, including anaerobic digestion process, composting method and fermentation process, for the production of biofuels, biofertilizers, as well as biogases and industrial enzymes. Bioeconomy refers to the sustainable development of biologically renewable resources and their transformation into value-added products, including biofuels, bioenergy, and food. Thus, the demand for land is constantly increasing as a result of the developing bioeconomy in modern times. For this reason, a part of the land should be kept in order to meet special needs. An example of this is the establishment of sequestered carbon forests. In this way, rather than increasing pressures on resources, the optimal and synergistic use of resources should be promoted through the expansion of the bioeconomy. It should also be noted that this biological approach integrated with a zero solid discharge system to recover energy and resources from food industry waste has been determined to be optimal from an economic point of view.

In particular, it should be emphasized that this thesis highlights modern technological advances in the rational management of food industry waste, including product recovery and processing methods. This study aims to clarify how a circular economy can be achieved by rationally managing food industry waste.

Keywords: *food waste, waste management, by-product, sustainability, bioeconomy*



Detection of Edges Using Structured Forests with OpenCV

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Abstract

Interpretation of image contents is one of the objectives in computer vision specifically in image processing. In order for a computer to “see” an image or video, Edge detection comes in handy. Edge detection is an image-processing technique, which is used to identify the boundaries (edges) of objects or regions within an image. Edges are among the most important features associated with images. The main motive is to determine and understand the images and to provide people with new images that are extra useful.

We tried different algorithms that help people with detecting edges we have coded a very unique code block, using structured Forest with the OpenCV library.

Even though the library has a full interface for other programming languages, such as Java, Python, and MATLAB/Octave, we chose Python language.

Through this application you can add different kinds of images or videos or maybe a whole new dataset and the Canny Algorithm will detect the edges of the image in order for the computer to “see” the exact image as you.

This project is usable by people who are familiar with coding about the OpenCV library and get more into the computer vision field.

Keywords: *Python, Computer Vision, Edge Detection, OpenCV, Canny, Structured Forests.*

The Importance of Local Food as Cultural Heritage in Rural Development

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Abstract

Today, as a result of orientation towards nature, rural tourism has gained importance. Turkey is a rich country in terms of local food, culture and cuisine. Every society has its own food culture. In Turkish cuisine, Denizli has a rich cuisine that has been able to transfer its local flavors from the past to the present. But today, local dishes have started to be forgotten. The fact that the local people do not recognize the local flavors or the tourists who come to the region do not recognize this culture cause being forgotten. Various studies are carried out to preserve local flavors and transfer them to future generations. The aim of this study is to re-evaluate the forgotten local dishes of Tavas-Denizli to bring them to tourism and to support rural development. Similar studies were examined in this study. In this study, 11 people from the local community and 3 people from the tourism sector in Denizli were interviewed with semi-structured interview technique. There are 10 questions in the semi-structured interview form. Interviews were conducted face to face. The collected data were analyzed by descriptive analysis method. As a result of the study, local dishes that are about to be forgotten are discussed in terms of rural development. Local cuisine culture, which has an important place in the Tavas region and is lost, can be added to the menus in restaurants, cooperatives can be opened, and participation in fairs can be ensured. Thus, rural development can be created for the local people.

Keywords: *Local food, Denizli, Turkish cuisine, Gastronomy tourism, Rural development*

Digitalization Efforts in Türkiye

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Abstract

In the 1990s and early 2000s, the progressing processes based on information and communication technologies became known under the concept of digitalization after the transformation, development, and transformation of technologies. Data, open data, big data, artificial intelligence, cloud computing, the Internet of Things, Industry 4.0, virtual realities, augmented reality, blockchain, three-dimensional printers, and many similar technologies or applications feed new discussions and lead to the emergence of digital society and digital state discourses. Türkiye also stands out as a country that participates in the process follows the transformations and developments and adapts to innovations. In the last twenty years, these transformations have been tried to be realized through legislative works on the one hand, large transformation projects on the one hand, and practices aimed at strategic goals on the other. Within the scope of this study, the technological transformation efforts carried out in the last twenty years, and the steps toward digitalization will be discussed, and the dimensions of change, transformation, and development will be revealed. On the other hand, technological transformation efforts in Türkiye's public administration can be generally evaluated within e-Government efforts until 2018. Türkiye's efforts in this direction can be discussed in five stages. 1993-2002 period, 2002-2006, 2006-2010 period, 2010-2018 and post-2018 period. Considering the recent years in which the e-Government field has changed and the transition to the digitalization period is discussed, it is seen that the process has evolved towards digitalization. Considering the work of the Presidency Digital Transformation Office, which was established after the transition to the Presidential Government System in 2018, it may be necessary to consider the post-2018 period separately. This paper will discuss Turkey's digitalization adventure during these periods, and related efforts will be summarized.

Keywords: *Digitalization, Digital Transformation Office in Türkiye, e-Government, Digital Government, D-Government*

Status of Green Finance in Azerbaijan: Current Applications, Obstacles and Future Potential

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Abstract

This article examines the current state of green finance in Azerbaijan. Existing practices and the obstacles that will limit these practices, and the opportunities and threats that will stand in the way of green finance for the future are discussed. As a result of the research, efforts to make green investment profitable, promoting green finance using technology and policy, the role of regulators and financial institutions in the green finance agenda were determined. Various observations have been documented about the challenges of green finance and solutions to green finance problems. The research reveals that Azerbaijan is still in the development stage in terms of green finance. In the article, it has been tried to determine the main development line of "green finance" in Azerbaijan by analyzing global trends and perspectives. As a result of the research in the article, it has been determined that the current practices in Azerbaijan have not reached the full level, but there are great opportunities for the future. Since this issue is new for Azerbaijan, it has been seen that environmental and social factors are not sufficiently taken into account in financial decision-making processes, and public-private sector cooperation is insufficient. However, taking steps towards Azerbaijan's richness in energy resources and the formation of the necessary legal framework for green financing, demonstrates that green finance has a potentially major development opportunity. Therefore, it is necessary to develop appropriate policies and regulations for the development of green finance in Azerbaijan.

Keywords: *Green finance, green bonds, green finance, environmental issues.*

JEL Code: *Q56,Q01,Q58*

The Future of Thermal Tourism in Sustainable Development

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Abstract

Denizli province, which is rich in terms of its geographical location and thermal resources, is one of the cities in Turkey with high potential for health tourism. The aim of this study is to identify the progress of health tourism in Denizli from the past to the present, determine its future potential, and explore potential actions that can be taken for future growth. A mixed-method approach was employed in the study, where a prepared interview form was administered to 15 Class A travel agencies in Denizli. The form consisted of 7 semi-structured interview questions and 16 survey questions. The interviews were conducted face to face. The study concluded that increasing the recognition of Denizli province in terms of thermal health tourism and its participation in the sector will contribute to sustainable development.

Keywords: *Thermal tourism, Denizli thermal, The future of thermal, Sustainable thermal*

Genetic Algorithm to Solve Optimization Problems

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Abstract

Mathematical optimization is a crucial method to find the best solution to a optimization problem from a set of solutions concerning some criteria included, defined by the optimization problem. It takes advantage of a large-scale search of algorithms for instance, Hill Climbing or Genetic Algorithm to find the most ‘fitted’ solution. The optimization problem is either maximizing or minimizing a Real Function by giving input from a defined search range and calculating the value of the function.

In addition, Genetic Algorithm is a search-based optimization technique, part of a larger class of Evolutionary Algorithms based on real-life biological evolution. Inspired by Charles Darwin’s work on natural selection, Genetic Algorithm uses evolutionary biology mechanisms such as crossover, mutation, survival selection, etc. to create a fresh and better generation.

Hill Climbing is a graph search algorithm used to solve mathematical optimization problems. Starting from a single individual, it continually tries to mutate this individual to create a better individual. If the mutation is successful and a better individual is found, then it is replaced. In this paper, we propose a new Genetic Algorithm working together with Hill Climbing in a hybrid way. The algorithm called GAHC (Genetic Algorithm Hill Climbing) tries to achieve better results than Genetic Algorithm or Hill Climbing working alone.

Keywords: *Optimization, Hill Climbing, Genetic Algorithm, Hybrid*

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