13th INTERNATIONAL CONFERENCE ON APPLIED ECONOMICS

CONTEMPORARY ISSUES IN ECONOMY

POLAND 26–27 JUNE 2025

ABSTRACT BOOK

EDITED BY

ADAM P. BALCERZAK

MICHAŁ MOSZYŃSKI

MICHAŁ BERNARD PIETRZAK

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Revisiting zero hunger from a multidisciplinary perspective: How to measure hunger and reduce it

JEL Classification: *Q18; I39; C33; C34*

Keywords: *global hunger index; dimensionality reduction; data imputation; partitioning around medoids clustering algorithms; genetically modified organisms*

ABSTRACT

Research background: The solution to the multifaceted problem of hunger remains a challenge: about 735 million people experience hunger, especially in sub-Saharan Africa, South Asia, and parts of the Middle East. It would be expected that the measurement of the seriousness of such an important problem would be carried out with scientific objective indices. However, this is not the case. The most widely used index, the global hunger index (GHI), uses participatory methods to weigh the four correlated facets (indicators) of hunger considered: undernourishment, child stunting, child wasting, and child mortality, which translates into subjective and inaccurate results.

Purpose of the article: We aim (i) to contribute an objective and realistic weighing scheme for the GHI that, in addition, avoids the double-counting problem derived from the correlation among their indicators; and (ii) provide accurate methods for non-available data imputation.

Methods: For (i), we propose a dimensionality reduction-based weighing scheme. For (ii), in countries with more than one non-available indicator, we substitute their current tentative qualitative classification according to the GHI Hunger Severity Scale with the accurate predictions provided by a partition-around-medoids clustering algorithm. For those with only one non-available indicator and a bounded GHI, we are able to deduce their true value.

Findings & value added: Our results demonstrate that the weights provided by the above methodological proposals differ dramatically from the subjective weights used in the GHI, which leads to significant changes in the GHI ranking of countries. These findings suggest reconsidering the relative importance of hunger because GHI is a vital tool for policymakers to understand this problem, make informed decisions, prioritize resources, track progress on global goals, and design effective and efficient interventions. Finally, we advocate for the use of genetically modified organisms and high-productive agriculture as one of the main instruments to face hunger.

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Towards sustainable labour market: Spatial analysis of the differences in the employment of women and men across the EU regions

JEL Classification: *J31; C20*

Keywords: *sustainable development goals; spatial analysis; sustainable labour market; employment; gender employment gap*

ABSTRACT

Research background: Reducing the gender employment gap (GEG) is a key challenge in the context of achieving the Sustainable Development Goals (SDGs), particularly in the area of decent work and equal opportunities (SDG8 and SDG5). This multidimensional problem plays a key role in regional policy, which is reflected in the legislative and executive measures taken at the level of the European Union.

Purpose of the article: The aim of this article is to analyse the relationship between the employment gap and selected socio-economic factors in the regions of the European Union at NUTS 2 level, with a particular focus on spatial interactions. This is particularly important for regional policy and the creation of a sustainable labour market.

Methods: The analysis is based on aggregated Eurostat data at NUTS 2 level. The empirical part used statistical and spatial econometric tools as: spatial correlation coefficients of Moran I and Geary C, local Moran I, spatial econometric models SDEM and SDM.

Findings & value added: The study identifies key labour market factors affecting GEG using spatial regression models. A higher share of part-time workers and longer working hours per employee are linked to increased GEG, while a greater share of women with higher education and a higher old-age dependency ratio correlate with its reduction. In turn, industrialization impacts GEG indirectly, influencing neighbouring regions. These findings highlight the systemic nature of GEG, emphasizing its economic, educational, and demographic drivers. The study underscores the need for regionally coordinated policies to address gender disparities at labour market and support sustainable development goals (SDG4, SDG5, SDG8).

RESEARCH PAPERS

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Managerial decisions on energy efficiency in small and medium sized enterprises

JEL Classification: *L26; L20; Q01; Q42; Q55*
Keywords: *energy efficiency; companies investments; sustainable development; SDGs; green transformation*

ABSTRACT

Research background: Energy efficiency has become a critical concern for small and medium-sized enterprises (SMEs) as they seek to reduce operational costs and minimize their environmental impact. However, the implementation of energy-efficient practices often depends on managerial decisions, which can be influenced by various factors such as financial constraints, lack of expertise, and limited access to resources.

Purpose of the article: This paper aims to investigate the key factors that influence managerial decisions on energy effectiveness in SMEs. By understanding these factors, the study seeks to provide insights into how SMEs can overcome barriers to adopting energy-efficient practices and improve their overall energy performance.

Methods: The research employs a mixed-methods approach, combining quantitative data from a survey of 500 SMEs across various industries and countries with qualitative data obtained through semi-structured interviews with 10 SME managers. The survey data is analyzed using statistical techniques to identify significant relationships between managerial decisions and energy effectiveness, while the interview data is analyzed to gain a deeper understanding of the decision-making process.

Findings & value added: The findings reveal that financial incentives, access to information, and organizational culture are the most influential factors in managerial decisions related to energy effectiveness in SMEs. The study also highlights the importance of tailored support and guidance for SMEs to overcome barriers and implement energy-efficient practices successfully. The value added by this research lies in its practical implications for policymakers, energy consultants, and SME managers, as it provides evidence-based recommendations for promoting energy effectiveness in the SME sector.

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The impact of progressive tax systems on social inequalities in EU countries: Fiscal policy and redistribution preferences

JEL Classification: *H23; H53; D31; D63*
Keywords: *progressive taxation; income inequality; redistribution; fiscal policy*

ABSTRACT

Research background: Economic inequality remains a significant challenge across EU countries, influencing social cohesion and democratic stability. Progressive taxation and social spending are key fiscal tools for addressing these disparities, yet their effectiveness varies depending on the structure of tax systems and public support for redistribution. This study examines the relationship between tax progressivity, social expenditures, and redistribution preferences, providing insights for policymakers seeking to balance economic efficiency with social equity.

Purpose of the article: The article aims to identify the relationship between the progressivity of personal income tax (PIT), the tax wedge, the share of PIT and social security contributions (SSC) in tax revenues, and the level of social expenditure with societal preferences for redistribution.

Methods: The study employs descriptive and comparative analysis, correlation analysis to determine the relationships between variables, and Ward's clustering method to group EU and associated countries based on fiscal policy redistribution instruments.

Findings & value added: The European Union and associated countries form distinct groups with similarities in terms of PIT progressivity, the share of PIT and SSC in tax revenues, and the level of public spending on social purposes. These groups differ significantly from other clusters. The study reveals that countries with similar fiscal policy instruments also exhibit similarities in societal preferences for redistribution. A significant correlation is found between tax system progressivity, the scope of social benefits, and public support for redistribution.

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Agri-food sector in selected Mercosur countries and Poland

JEL Classification: *Q17; Q13; C67*
Keywords: *Mercosur; agri-food sector; Poland; input-output model*

ABSTRACT

Research background: In December 2024, representatives of the European Union and Mercosur countries (Argentina, Brazil, Paraguay, and Uruguay) concluded negotiations on the EU–Mercosur partnership agreement. This sparked a debate about the threats posed by this agreement to the EU agri-food sector, including Poland. This sector is considered highly sensitive.

Purpose of the article: The aim of the article is to compare the significance of the agri-food sector in selected Mercosur countries (Argentina and Brazil) and Poland in 2023, evaluate the relationships between various elements of this sector, as well as its linkages with other sectors of the national economy and foreign markets.

Methods: The research is based on the world input-output tables. The data source is the ADB-MRIO which is an Multiregional Input-Output Tables developed by the Asian Development Bank (ADB). The input-output model has many advantages in studying the structures of individual sectors and their connections with other sectors of the economy and with foreign countries.

Findings & value added: The conducted research showed that the leading component of the agri-food sector in Brazil and Argentina is agriculture, while in Poland, it is the food industry. Exports play a significant role in the distribution of the gross output of agriculture in Brazil and Argentina and Poland's food industry. Contrary to Poland, the agri-food sector in Mercosur has not yet been the subject of research using input-output tables. Thus, the conducted study fills the existing research gap.

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The impact of the pandemic on jobs and productivity

JEL Classification: *E24; J21; J23; J24; I15; O40*
Keywords: *pandemic; employment; productivity; labor market; economic impact*

ABSTRACT

Research background: The COVID-19 pandemic has significantly disrupted global labor markets, altering employment structures, productivity levels, and economic stability. Governments and businesses faced unprecedented challenges, leading to job losses, remote work adaptation, and shifts in labor demand across sectors.

Purpose of the article: This study aims to analyze the impact of the pandemic on employment rates and labor productivity. It explores the relationship between economic downturns, business adjustments, and workforce dynamics, providing insights into long-term structural transformations. Additionally, the research evaluates policy responses and strategies implemented to mitigate job losses and sustain productivity.

Methods: The study employs a mixed-methods approach, combining quantitative analysis of employment data with qualitative assessments of policy interventions.

Findings & value added: The results indicate that the pandemic accelerated digitalization, leading to job polarization, with high-skill and remote-friendly jobs expanding while low-skill, in-person roles declined. Productivity was affected by workplace transformations, with some industries experiencing efficiency gains.

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Sorting cryptocurrencies based on consensus mechanism and blockchain protocol layer

JEL Classification: *A11; A14; B16; G10*

Keywords: *blockchain protocol layers; consensus mechanisms; cryptocurrency classification; systematic literature review; crypto asset typology*

ABSTRACT

Research background: Cryptocurrencies are a new asset class with applications beyond finance. Despite extensive research on blockchain technology, a unified classification is missing. Distinguishing different types would help better analyze the volatility causes.

Purpose of the article: This paper reviews blockchain protocol layers, categorizing cryptocurrencies into four layers based on network protocol layers 0–3. Existing research does not provide a comprehensive framework for sorting cryptocurrencies into protocol layers. The study also incorporates consensus mechanism as distinguishing factor to address gaps in current literature.

Methods: A systematic literature review analyzes cryptocurrency and blockchain classifications, using academic sources and cryptocurrencies technology whitepapers to identify key distinctions, followed by a synthesis of the findings.

Findings & value added: This paper categorizes cryptocurrencies into four protocol layers (0–3) and identifies five consensus mechanisms among top cryptocurrencies, filling a gap in existing research. This categorization can be used as an independent variable for regression analysis to better assess volatility of cryptocurrencies.

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The problem of the detection and identification of disinformation in the managerial decision-making process

JEL Classification: *D83; M15*
Keywords: *information; disinformation; detection of disinformation; identification of disinformation*

ABSTRACT

Research background: This article deals with the very serious problem of detecting and identifying disinformation in the decision-making process of a company. Currently, the problems of disinformation are given considerable attention in the military-political field. However, disinformation also occurs in the competitive environment. Most specialized publications dealing with disinformation are focused on theoretical approaches.

Purpose of the article: The authors propose a concept for solving problems related to the detection and identification of obtained information as disinformation. In this concept, they proceed from the basic assumption that the mere truthfulness of the obtained information is not a sufficient criterion for its use in the decision-making process of the company's management.

Methods: The following methods were used in the article: analysis, synthesis, induction, deduction and abduction. To achieve the set goal, a procedure was established: defining the concept of "Quality Information" using the so-called "basic attributes of information quality" and the concept of "Quality Source of Information" using the "basic attributes of information source quality". Furthermore, the concept of disinformation, individual types of disinformation and their basic characteristics were defined. The basic characteristics common to all disinformation were also defined: intention (intention to deceive), goal (what is to be achieved), rational side (telling the recipient of disinformation the "truth") and emotional side (influencing the recipient of disinformation by fear of the consequences of not respecting the rational side of disinformation or the benefit of respecting the rational side of disinformation). Subsequently, a procedure was proposed for detecting and identifying disinformation.

Findings & value added: The feasibility of the proposed conceptual model for solving the problem of detecting and identifying disinformation was successfully verified in a demanding business environment.

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Childhood obesity changes and socio-economic factors: Evidence from Slovakia

JEL Classification: *C35; C83; I18; Q18; I12*

Keywords: *childhood obesity; parental perception; EU School Scheme; socio-economic determinants; ordered logit model*

ABSTRACT

Research background: Childhood obesity affects public health, human capital, and socio-economic development. To promote healthy eating habits and sustainable food consumption, the EU School Scheme provides schoolchildren with fruit, vegetables, milk, and dairy products, alongside educational activities. Understanding the determinants of childhood body figure changes over time is crucial for designing effective policies that enhance both public health and sustainable food systems.

Purpose of the article: This study examines the EU School Scheme implemented in Slovakia and socio-economic determinants of perceived obesity change in children over 2017 and 2022, as assessed by parents. The findings provide insights into the role of policy interventions and socio-economic conditions in shaping obesity-related outcomes.

Methods: The analysis uses nationally representative survey data on 1621 children. To account for complex survey design features, the study applies survey-weighted ordered logistic regression, multilevel ordinal models, and generalized ordered logistic regression in Stata, with stratification by region and clustering at the school level.

Findings & value added: Participation in the EU School Scheme is consistently associated with lower odds of perceived weight gain in children. Children aged 11–15 had significantly higher odds of gaining weight, highlighting adolescence as a high-risk period. Fathers' economic inactivity emerged as a key socio-economic risk factor, while School scheme milk distribution via vending machines was linked to increased odds of weight gain. Among educational measures, the school garden component was associated with reduced odds of weight gain. Using complex survey-adjusted models, the study offers evidence to guide cost-effective school nutrition policies that improve child health and foster human capital.

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The impact of selected ESG factors on employee turnover in the SMEs

JEL Classification: *M12; M14; L26*
Keywords: *ESG; employee turnover; SMEs; sustainability; CSR*

ABSTRACT

Research background: With the growing focus on sustainability and ethical practices, ESG factors are becoming crucial in employee retention decisions. Companies that emphasize responsible and sustainable practices experience lower turnover, enhancing employee satisfaction and loyalty. Furthermore, firms with strong ESG strategies attract high-quality talent, contributing to long-term stability and competitiveness.

Purpose of the article: The purpose of this article is to explore the impact of selected ESG factors on employee turnover within SMEs in the V4 countries. The article aims to understand how ESG factors influence employee retention in these nations and contribute to organizational stability.

Methods: In March 2024, empirical research was conducted on selected ESG areas within the SME sector in V4 countries. The study aimed to collect respondents' opinions on various aspects of corporate management. Data was gathered via an online questionnaire organized by the European Centre for Economic and Social Research (ECESR) in collaboration with MSF. A total of 1,056 respondents participated across all V4 countries. Linear regression was employed to analyze the relationships between independent and dependent variables, enabling the identification and quantification of linear dependencies.

Findings & value added: The research found that X5, focused on employee qualifications and career growth, most impacted turnover in Slovakia and Hungary. In contrast, X6, centered on corporate benefits, was key in the Czech Republic and Poland. This study highlights the role of ESG factors in employee retention in SMEs across V4 countries, emphasizing employee development and corporate benefits in reducing turnover and enhancing organizational stability and competitiveness.

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Exploring energy management in SMEs: A bibliometric analysis

JEL Classification: *M10; O31*
Keywords: *energy management; SMEs; bibliometric analysis*

ABSTRACT

Research background: Small and Medium-sized Enterprises (SMEs) play a significant role in global energy consumption, accounting for 9–29% of gross inland energy use and exceeding 13% of the global total final energy demand, equivalent to 74 exajoules. Thus, effective energy management in SMEs is crucial for successful energy transformation. It is imperative to identify and understand the barriers hindering SMEs to facilitate the transition to more efficient energy practices.

Purpose of the article: This article aims to analyse the scale, dynamics, and outcomes of research on energy management among SMEs.

Methods: The authors conducted an extensive bibliometric analysis utilising performance analysis methods and scientific mapping. The study encompassed 301 publications extracted from the Scopus database, and the analysis was facilitated using MS Excel and VOS viewer applications.

Findings & value added: The bibliometric analysis reveals a growing research interest in SME energy management, with a significant increase in publications over the last decade. Key research clusters focus on energy efficiency, policy frameworks, and emerging technologies. However, gaps remain in organisational barriers, benchmarking, digitalisation, and financing mechanisms. Addressing these gaps can enhance SMEs' energy efficiency strategies, supporting their transition toward sustainability and contributing to broader energy policy and economic goals.

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The mechanisms of entrepreneurial celebrity and personal branding: Assessing their influence on consumer trust, referral behavior, and purchase intention

JEL Classification: *M130*

Keywords: *entrepreneurs; personal brand; purchase intention; celebrity image*

ABSTRACT

Research background: In an era where digital visibility and personal branding are critical for entrepreneurial success, the ability of entrepreneurs to construct and maintain a compelling personal brand has become a key determinant of business performance. The intersection of entrepreneurship and personal branding remains underexplored, particularly in terms of how it influences customer trust, public perception, and business success. This research investigates the components of effective personal branding strategies, with a focus on their impact on entrepreneurial celebrity status.

Purpose of the article: The primary objective of this study is to examine how entrepreneurs' personal branding strategies influence their perceived celebrity status and, consequently, customer trust, word-of-mouth referrals, and purchasing intention. By identifying key branding elements such as social and ethical responsibility, professional capabilities, lifestyle, and public image, this research provides a comprehensive framework for understanding the impact of personal branding on business success.

Methods: The study employs a quantitative research design, utilizing structured questionnaires distributed among 112 students at Alexandru Ioan Cuza University, Iași. Regression was applied to assess the relationships between personal branding dimensions and their impact on consumer behavior.

Findings & value added: The results indicate that active audience engagement and physical attractiveness significantly enhance an entrepreneur's perceived influence. Moreover, a positive perception of professional dedication strongly correlates with customer referrals. Interestingly, while social and ethical responsibility is often valued, excessive emphasis on these aspects negatively impacts purchasing intention, suggesting a nuanced relationship between ethical branding and consumer behavior.

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Development of open innovations in the food industry: Challenges and threats

JEL Classification: *O36; O34; O38; Q18; Q56*
Keywords: *open innovation; development; economic and financial challenges; food sector; sustainability*

ABSTRACT

Research background: The field of open innovation is still early and needs a consistent theory and application to the food sector practice. According to the bibliometric analysis, this sector is under-researched in the existing open innovation literature. Open innovation in the food industry is driven by various determinants that influence how companies engage with external sources of knowledge to enhance their innovation capabilities. The need to keep up with technological advancements and market demands drives enterprises to adopt open innovation strategies. Open innovation is increasingly aligned with sustainability objectives.

Purpose of the article: The article aims to indicate and evaluate determinants and barriers to developing open innovations in the food industry.

Methods: This study focuses on quantitative and qualitative data analysis using different parametric and non-parametric statistical methods, including fuzzy-set Qualitative Comparative Analysis (fsQCA) in open innovation research. The study contributes to implementing a holistic approach to identify, compare, and evaluate determinants and barriers to open innovation development in the food industry. The study also uses PESTLE and SWOT methods in open innovation in the food sector.

Findings & value added: There is as yet no holistic model of open innovation that includes the innovation process's determinants and food industry specifics, as well as the limits to opening it up. Companies engage in open innovation to reduce costs, improve time-to-market, and enhance their environmental impact, which is particularly relevant in the food sector. The results of the conducted analyses are essential in shaping the sectoral policy toward open innovation development in the food industry. Business owners, banks, financial institutions, government, and self-government administration representatives may use the analysis.

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Determinants of the Poland's agri-food exports: A gravity model analysis

JEL Classification: *F14; L66; Q17*
Keywords: *gravity model; agri-food exports; Poland; new member states; PPML*

ABSTRACT

Research background: The enlargement of the European Union has significantly changed the economic conditions for the food producers from the new Member States (NMS) as well as gave the food products trade a new and strong impulse. The impact of the new Member States integration with the European Union on the food products trade varied by the said state. The highest and fastest growing food exports was achieved by Poland. As a result, Poland became one of the largest exporter of agri-food products among the EU countries.

Purpose of the article: The aim of the research is to investigate the determinants of the intensity of Polish agri-food exports to its trading partners with the use of the trade gravity approach in a panel data set covering the period 2002–2022.

Methods: The research was conducted using the augmented gravity model. The basis of the gravity model is Newton's universal law of gravitation. The gravity equation in international trade states that bilateral trade flows are proportional to the economic size of a trade subject and inversely proportional to the geographic distance between trading partners. The augmented gravity model includes additional variables, which help explain trade relationships more accurately. The method is based on the Poisson pseudo maximum likelihood (PPML) regression.

Findings & value added: The results of this study add to what is already known about international trade between Poland and other countries. The augmented gravity model verifies that EU membership was the most significant factor influencing the growth of Polish agri-food exports in the analysed time period. The results also confirm the importance of the real GDP in the increase of the Polish agri-food exports as well as the negative impact of long distance on the exports dynamics.

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The evolution of economic models in the context of global transformation: From the green economy to sustainable development as a paradigm for the future

JEL Classification: *F01; F02; F41*
Keywords: *max evolution of economic models; global transformation; sustainable development; economic innovation*

ABSTRACT

Research background: The growing awareness of climate change and its impact on global economies creates an urgent need to shift from traditional growth models to sustainable development that integrates economic, social and environmental aspects. Global economic transformation requires new economic models. The green economy, with its emphasis on eco-innovation and green technologies, represents a key transitional stage in the evolution of economic models, leading to more sustainable and resilient economic systems.

Purpose of the article: The aim of this article is to analyse the evolution of economic models in the context of global transformation, with a particular focus on the transition from the green economy to sustainable development as the paradigm of the future, and to identify the key factors and challenges influencing this process.

Methods: The research methods used in the article include a comparative analysis of existing economic models and case studies of countries and sectors implementing sustainable economic models, complemented by economic modelling and scenario simulations to assess the potential impacts of economic transformation.

Findings & value added: The article provides a comprehensive analysis of the evolution of economic models in the context of the global transition, identifying the key drivers of this process and the challenges of moving from a green economy to sustainable development. The study's conclusions highlight the importance of a holistic approach to economic policy and the integration of economic, social and environmental aspects in shaping future economic models. The added value of the article lies in providing a solid theoretical and empirical basis for further research on sustainability and practical recommendations for policy makers and economic practitioners.

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The role and importance of organizational resources in effective management on the example of an enterprise

JEL Classification: *A13; M12*
Keywords: *organization management; human resources management*

ABSTRACT

Research background: Effective company management consists of a number of factors, standards and principles that aim to guarantee an optimally high level of organization management in order to create the basis for the proper functioning of business activities. Shaping and improving all management systems is not an easy task. Most business activities focus on changing only individual departments in the management pyramid in order to choose the best option to start changes in the organization. Most often, companies decide to change their human resources management in the employee motivation system, organizational culture and company strategy. Companies that aim to increase their competitiveness thanks to appropriate employee motivation and changes in the company's strategy have a chance for further development and remaining in the competitive market.

Purpose of the article: The aim of the article is to get acquainted with the individual departments of the organization as well as the warehouse structure. In the presented work, the research problem was based on the assumption that individual changes in organizational departments and human resources management and in the employee motivation system are an important factor in achieving success.

Methods: The author's research method is a survey.

Findings & value added: The work was written to present the role of organizational resources in the effective management of an enterprise, which also involves warehouse management. Thanks to the anonymous survey, we received results showing the roles and importance of managers in the company and we learned how important it is to properly motivate employees to achieve greater results

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The use of multidimensional statistical analysis to assess the effectiveness of the transport process in a manufacturing company

JEL Classification: *L1O; R10; R15*
Keywords: *transport; business management; transport process*

ABSTRACT

Research background: In order to assess the effectiveness of the transport process in the company, the linear ordering method from the area of multidimensional data analysis was used. The study covered indicators from 2020–2024 that affect the efficiency of the transport process. The following indicators were selected for analysis: transport flexibility, transport costs per kilometer, transport costs per transport, degree of use of means of transport, failure rate of means of transport, number of kilometers per means of transport. These variables create a development measure for the efficiency of the transportation process. The analysis did not take into account those variables whose values did not change over the years examined.

Purpose of the article: The aim of the article is the price of the efficiency of the transport process in a selected production company identification of transport management tools and methods from a process perspective.

Methods: Linear ordering method from the area of multidimensional data analysis.

Findings & value added: It was assumed that the results of the indicators achieved in the years 2020–2024 are the basis for increasing the efficiency of the transport process. Determining the synthetic variable allowed for the creation of a ranking of the analyzed years according to the level of efficiency of the transport process.

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Financial and management accounting's digital transformation: The prospects of higher education

JEL Classification: *M41; M49*
Keywords: *artificial intelligence; digitalization; accountant job; digitalisation in accounting*

ABSTRACT

Research background: The fast development of information technology, especially in relation to digitalisation and artificial intelligence (AI) and its effects on the tasks and responsibilities of accountants, presents serious challenges and opportunities for the accounting profession.

Purpose of the article: This study's goals are to evaluate how artificial intelligence has and may alter the function of the accountant and to clarify how higher education can help develop new skills, particularly with regard to the use of AI tools.

Methods: In Lithuania, a survey was conducted. A total of thirty-two accounting professionals were surveyed. Regression analysis, factorised boxplot analysis, and the t-test are used to analyse the data. These methods allow for a comprehensive examination of the impact of AI on accounting practices and the skills needed for adaptation.

Findings & value added: The findings demonstrated that there is proof of a shift in the accounting industry. In order to detect errors and avoid repetitive activities, accountants require greater expertise, especially in areas like cost allocation and transaction registration, where automated processes and artificial intelligence are utilised. Therefore, greater knowledge of automation and artificial intelligence is required to maintain productivity and competitiveness in the labour market. Another important conclusion is the respondents' great desire to learn more about AI-based tools. Since the higher education system may provide more resources to teach, improve, or refresh knowledge about data analysis, process automation, and the use of artificial tools to handle the challenges provided by the digitisation of accounting operations, the findings have significant practical implications.

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Trading friction anomalies in European emerging markets

JEL Classification: *G10; G12; G14; G1*
Keywords: *financial market anomalies; conditional mispricing; asset pricing models*

ABSTRACT

Research background: According to the efficient market hypothesis, investors are rational, and stock prices fully reflect all available information. However, empirical research has shown that there are strategies where the difference between an investment's return and its expected value is significant. This study examines strategies related to trading frictions and conditional mispricing to identify anomalies in European emerging markets.

Purpose of the article: The purpose of this paper is to confirm the existence of trading friction anomalies and to test whether information about past asset mispricing enhances the profitability of anomaly-based investment strategies. Additionally, this study aims to identify the most robust strategy, taking into account not only trading frictions and mispricing but also firms' capitalization characteristics.

Methods: The study analyzes data from the five largest emerging equity markets in Central and Eastern Europe (CEE) included in the MSCI Emerging Markets Europe Index: the Czech Republic, Greece, Hungary, Poland, and Turkey. Data is sourced from EquityRT. Five asset pricing models are used to assess asset mispricing. The SUR models and the Generalized Method of Moments (GMM) are applied to evaluate portfolio mispricing.

Findings & value added: The research shows that conditional mispricing explains anomalies related to turnover, momentum, and technical analysis. Risk- and volatility-related anomalies are concentrated in the most underpriced assets, while shape-related anomalies are found in the most overpriced stocks. Strategies based on risk anomalies and conditional mispricing remain profitable and robust across different market conditions and hold up over the long term. Company capitalization has a smaller impact on profitability than the past mispricing effect.

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Gold price sensitivity to geopolitical risk: Long-term perspective

JEL Classification: *D81; G11; G12; G15; G32*
Keywords: *gold; geopolitical tensions; geopolitical risk; GPR Index; alternative finance*

ABSTRACT

Research background: Recently there has been an increase in geopolitical risk (GPR) around the world. In these conditions, investors are looking for stable assets capable of hedging against risk. Gold responds to this, which for years has been treated as a safe haven. This paper asks the research question: how does the GPR affect the price of gold, which is a safe haven under geopolitical tensions.

Purpose of the article: The main objective of this study is to analyse the impact of geopolitical risk on the volatility of gold prices from 1968–2025. The specific objective is analysis of the volatility of geopolitical risk and gold prices.

Methods: Two multiple linear regression models ('forward selection' method) were constructed using correlation tests and the relationship between gold price volatility and geopolitical risk was examined. In the simple linear regression analysis, eighteen linear regression models using the lag method were used to assess the time of impact of geopolitical risk on gold prices.

Findings & value added: The results show that GPR slightly affects gold price volatility in the long term, but at the same time, increased GPR in the short term strengthens price volatility. The study reveals the different direction of the impact of GPR sub-indices on gold prices. A positive relationship of gold prices with geopolitical threats (GPRT) and a negative relationship with geopolitical acts (GPRA) were found. The results also showed the different reaction time of gold prices to GPRT and GPRA. It was proven that gold prices are sensitive to geopolitical threats in the short term and to geopolitical actions in the long term. Our observations provide important information for investors and policymakers. They can be used to assess potential investment and trading opportunities in the gold market in times of geopolitical risk.

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Framework for strategic decision making in the application of digital technologies

JEL Classification: *M10; O32*
Keywords: *strategic decision making; integrated framework; digital technologies; competitiveness; service business*

ABSTRACT

Research background: Digital transformation is a key driver of organizational competitiveness, yet many companies struggle to achieve business objectives after application of digital technologies. This misalignment between strategic objectives and implementation of digital technologies can lead to inefficiencies, increased operational costs, and missed growth opportunities. The rapid pace of technological advancements further complicates decision-making, making it essential for companies to adopt structured frameworks for taking their investments decisions.

Purpose of the article: To address this challenge, this study explores strategic decision-making techniques and integrates them into a single framework that helps companies to align the application of digital technology with strategic business objectives seeking to achieve long-term competitive advantage.

Methods: The research employs a systematic literature review in the Web of Science Core Collection database to identify research gaps in management field. Despite extensive studies provided on individual strategic models, the integration of them into multi-level decision-making frameworks for strategic business management is missed in the scietific literature. The authors of the paper synthesize and integrate five key techniques: Porter's competitive strategy model, Importance-Performance matrix, Trade-off model, Stacey matrix, and quality-time-cost-flexibility dimensions into a unique framework. The suggested framework allows companies to align the application of digital technology with strategic business objectives, especially in service business case.

Findings & value added: Findings indicate that the multi-level framework supports strategic decision-making. The study presents a practical example demonstrating how this framework can guide companies in selecting technology and its implementation technique. By balancing cost and other dimensions, the firms in the logistics sector can develop their competitive advantages. By presenting the integrated framework, the research contributes to academic knowledge and practical applications in logistics business management. It offers valuable insights for decision-makers seeking to align investments into digital technology with strategic business goals, ultimately improving competitiveness in an evolving digital landscape.

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Economic aspects of competition in the health insurance market in the Czech Republic

JEL Classification: *I11; I13; I15*

Keywords: *healthcare economics; health insurance market; health insurance competition; market concentration; Herfindahl–Hirschman Index*

ABSTRACT

Research background: The Czech health insurance market operates under a regulated pluralistic model with seven public insurers, where competition is structurally constrained by uniform pricing and redistribution mechanisms. Previous studies highlight systemic concentration risks due to the dominant position of The General Health Insurance Company, yet lack longitudinal analysis of how regulatory frameworks interact with market dynamics.

Purpose of the article: This study examines the competitive dynamics of the Czech health insurance market through the lens of the Herfindahl-Hirschman Index (HHI), addressing the gap in empirical analysis of market concentration and its economic implications in a regulated, pluralistic insurance system.

Methods: Using quarterly revenue data from 2013–2023 across all seven Czech public health insurance funds, we calculate HHI scores to assess market concentration. Secondary data on regulatory frameworks, contribution structures, and insurer market shares are sourced from the Czech Health Insurance Bureau and Ministry of Health reports and also from annual reports of individual health insurance companies.

Findings & value added: The market demonstrates high concentration (HHI > 2.500), driven by the persistent dominance of The General Health Insurance Company (56% market share). Despite legislative barriers preventing price competition, the redistribution mechanism amplifies asymmetries between funds. Policymakers should reconsider rigid contribution rate harmonization and expand risk-equalization parameters to mitigate systemic advantages for incumbent insurers. For regulators, HHI volatility signals the need for counter-cyclical stabilization measures tied to macroeconomic indicators. This is the first longitudinal HHI analysis of Czech health insurance competition, quantifying how regulatory constraints paradoxically sustain concentration despite pluralistic design. The methodology innovatively integrates business cycle proxies with structural competition metrics, offering a template for transitional healthcare markets.

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Garbage in, garbage out? The impact of data quality on the performance of financial distress prediction models

JEL Classification: *C53; C55; G33*
Keywords: *financial distress prediction; data preparation; data cleaning; predictive modelling*

ABSTRACT

Research background: Accurately predicting a company's financial state is essential for informed decision-making and effective risk management. The quality of input data plays a crucial role in the performance of predictive models.

Purpose of the article: This study examines the impact of data preparation on the accuracy and robustness of financial distress prediction models. When creating the prediction models, two approaches are compared: one developed using raw, unprocessed data and another constructed with thoroughly cleaned and validated data.

Methods: Using comprehensive publicly available financial data on companies and applying machine learning algorithms, the study evaluates the predictive accuracy of the models and the robustness of the methods against data inconsistencies.

Findings & value added: The results reveal the differences in model performance, highlighting not only the enhanced accuracy of models built on cleaned data but also differences in the robustness of the methods to uncleaned data. This research provides valuable insights into the importance of data preparation for reliable financial state prediction and offers guidance for practitioners on managing data quality challenges.

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The stabilization role of natural resource funds in counteracting the resource curse: A systematic literature review

JEL Classification: *F21; O11; O23; Q32; Q38*
Keywords: *natural resource funds; stabilization; resource curse; economic development; systematic literature review*

ABSTRACT

Research background: The resource curse represents a critical challenge to the stable, sustainable, and long-term economic development of resource-rich countries. One of the main causes of this issue is the dependence of these economies on the global commodity market, particularly on fluctuating commodity prices. To mitigate this vulnerability and insulate domestic economies from external shocks, natural resource funds have been established. Over time, both the significance and structure of these funds have undergone substantial transformation. The question of their effectiveness in fulfilling a stabilization function has attracted the interest of many researchers. However, existing studies provide inconclusive results, indicating the need for further in-depth analysis.

Purpose of the article: The objective of this study is to systematically evaluate all available evidence regarding the relationship between the effectiveness of natural resource funds in fulfilling their stabilization function in the context of counteracting the resource curse.

Methods: The study employed the SLR technique to examine carefully selected literature for the period 1990–2023.

Findings & value added: The study found that the analysed issue is highly relevant, current, and multidimensional. At the same time, it revealed a lack of consensus among researchers regarding the effectiveness of natural resource funds in performing their stabilization role. Different studies apply various methodologies and evaluation indicators, making it difficult to compare results. Additionally, in recent years, future generations' funds have gained popularity, differing significantly in structure and objectives from traditional stabilization funds. There is a noticeable gap in research analyzing the differences between various types of resource funds, as well as studies considering the type of exported resource or the level of economic development of the examined countries. Furthermore, existing studies often lack comprehensive analyses incorporating a broad range of indicators and control variables.

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The role of green bond issuance: Assessing the impact on stock prices of European listed companies

JEL Classification: *G12; G14; G18; G20; G32*
Keywords: *green bonds; stock price reaction; green bond certification; sustainable finance; event study*

ABSTRACT

Research background: Green bonds have gained significant importance as financial instruments supporting the achievement of sustainable development goals, with Europe being a key player in their issuance. Despite the growing prominence of green bonds, their specific impact on the stock prices of European listed companies remains insufficiently explored in the existing academic literature.

Purpose of the article: The purpose of this study is to investigate the effect of green bond issuance on the stock prices of European listed companies, with a focus on geographical differences, company size, bond issuance size relative to company capitalization, and green bond certification status.

Methods: The study employs the event study methodology to analyze market reactions to green bond issuance events. Data from companies across four regions in Europe (Central and Eastern Europe, Northern Europe, Southern Europe, and Western Europe) are analyzed. The research also takes into account factors such as company size, the relative size of bond issuance to company capitalization, and whether the bonds are certified as green.

Findings & value added: The study finds that, generally, the issuance of green bonds does not lead to significant changes in the stock prices of the issuing companies. However, a notable exception exists with the certification status of the bonds. Certified green bonds tend to be perceived more favorably by the market, while noncertified bonds are associated with a decline in stock prices. These findings highlight the importance of certification in green bond issuance and suggest that financial markets react differently depending on whether the bonds are certified. The study contributes to the literature on sustainable finance by providing empirical evidence on how green bond issuance influences company market value and offers insights for investors and policymakers in promoting the development of green finance.

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Patents and the business cycle in Poland: Conculsions from SVAR modelling of technology shocks

JEL Classification: *E32; O33; O34; C36*
Keywords: *patent filings; business cycle; technology schock; SVAR modelling*

ABSTRACT

Research background: The objective of a patent is to allow investors to capture a large share of profit from producing new knowledge through isolating from competition. Invention activity is an important innovation development factor, which leads to upturn in economic activity. According most economic theories the opportunity cost of investing in productivity growth is lower during downturns, what encourages innovativeness and makes innovation countercyclical, whereas the empirical studies show that innovation behaves procyclically.

Purpose of the article: The aim of the paper is to investigate an impact of technology shock to the Polish economy in the period 2007–2023.

Methods: Data on patent filings were used as an instrumental variable for the identification of technology news schocks in a structural vector autoregression (SVAR) model. Real GDP testifies on the state of the economy. In order to illustrate the propagation of technology news shocks to the broader economy, impulse response functions (IRF) and forecast error variance decompositions (FEVD) were estimated. Additionaly, the economy reactions on technology shocks in different sectors were calculated. Data comes from the Polish Statistical Office databases and the Polish Patent Office.

Findings & value added: The technology shock seems to be procyclical in regards to aggregated activity, and it accounts for a considerable share of real GDP fluctuations. The novelty of the approach relies on the identification of technology news shocks, that raise expectations about future productivity growth. Consequently, using information on patent filings enables to dispense from all the identifying assumptions traditionally used in the literature. Sectors where patent activity may be treated as an early warning indicator of aggregated economic activity were indicated, followed by recommendations regarding monetary and fiscal policies.

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Sustainability development (ESG) in the opinion of diary cooperatives management in Poland

JEL Classification: *Q01; Q13; M14; O13*

Keywords: *sustainable development; ESG; dairy cooperatives; business strategy*

ABSTRACT

Research background: Sustainable development has become key to effective business operations today. Research indicates that organizations implementing sustainable practices are more likely to invest in research, development, and product innovation.

Purpose of the article: This research, aiming to determine the opinions of dairy cooperative managers regarding sustainable development (ESG), holds significant implications for the future of the dairy industry and sustainable business practices.

Methods: The study was conducted using a questionnaire survey directed at the management of dairy cooperatives in Poland. Ninety-six respondents from 20 cooperatives in the dairy sector participated in the study. The interview questionnaire was conducted during the authors' financial statement review of the units, a process where the financial performance and sustainability practices of the cooperatives were assessed. Hence, a relatively large group of respondents actively completed the questionnaire. Respondents were divided into groups based on the size of the cooperative in which they work. Small, medium, and large enterprises were distinguished based on employment.

Findings & value added: The research results revealed significant differences in the approach to ESG issues among managers of small, medium, and large cooperatives. Large cooperatives show greater formalization of management processes, while smaller ones may need support in implementing such standards. However, all categories of cooperatives seem to value ethics, transparency, and dialogue, which is a positive signal for the future of cooperatives. In the opinion of business managers, sustainable development is becoming a key element of business strategies. This underscores the influential role managers play in promoting and implementing sustainable practices, which can lead to improved company image and long-term financial stability.

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Factors determining patient behavior regarding innovative solutions in medicine on the example of telemetric monitoring of heart rhythm

JEL Classification: I11; I18; K23

Keywords: modern technologies; patient behaviour; cardiac care; health monitoring; attitudes; process management; interorganizational cooperation

ABSTRACT

Research background: The effectiveness of the health care management based on innovative organizational and technological solutions depends to a large extent on the attitudes of patients towards the new solutions. Modern technologies allow medical staff to be supported in the process of monitoring the condition of a patient outside the medical facility and for a relatively quick response in a situation where his health and life are at risk.

Purpose of the article: The aim of the article is to identify the factors determining consumers behaviour regarding innovative solutions in the process of monitoring the health of a patient with heart failure. It focuses on exploring the patients intention to use the solution and evaluate the degree of influence of different factors on individual's acceptance of the innovative monitoring.

Methods: The article is prepared on the basis of the literature on the subject and the results of direct research carried out using the technique of a questionnaire distributed to patients covered by the study entitled: Improvement of the health of patients with heart failure through the pilot implementation of telemedicine services in the Upper Silesian Medical Center in Katowice. The Partial Least Squares SEM model is used to identify the determinants the patients' intention to use the health monitoring device. The multigroup analysis is also performed to analyse the impact of socio-demographic factors.

Findings & value added: The article presents the importance of factors influencing consumers' (patients') intentions to use an innovative solution monitoring the patient's health such as such perceived ease of use, perceived usefulness innovativeness, subjective norm and attitude toward using The research results allow for the formulation of recommendations aimed at taking actions that increase patients' willingness to use solutions that improve the healthcare system and, above all, increase patient safety. The findings be useful for health policy entities and managers of specialist medical facilities.

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When does a hospital receive state aid? The private investor and private creditor test in management practice

JEL Classification: *I11; I19; K23*

Keywords: *state aid; hospital financing; private investor test; private creditor test; financial distress; management in health care*

ABSTRACT

Research background: The Polish healthcare system has long faced financial challenges, prompting public entities to support hospitals through recapitalization, debt forgiveness, or guarantees. However, under EU law, state aid is generally prohibited if it distorts competition. The private investor test and private creditor test assess whether public entities act as rational market operators. Conducting these tests for hospitals presents legal and managerial challenges.

Purpose of the article: This article examines the practical difficulties in developing private investor and private creditor tests in hospital financing. It focuses on methodological challenges, considering both legal and economic aspects, with emphasis on assessing the rationality of public financial decisions.

Methods: The article uses a case study on the regulations in question based on the authors' practical experience. The content of The Private Investor and Private Creditor Test in Management Practice is discussed, taking into account possible difficulties from the perspective of medical entities.

Findings & value added: The article provides a structured approach to evaluating public support for hospitals against market criteria, ensuring compliance with state aid regulations. It highlights key challenges such as the lack of market benchmarks, complex hospital financing, and the need for an integrated legal-economic perspective. The findings offer practical insights for policymakers, hospital managers, and financial experts, enhancing financial decision-making and regulatory compliance.

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Ergonomics and occupational safety as determinants of competitiveness and innovation of enterprises in the era of digitalization

JEL Classification: *I15; O32; Q55*
Keywords: *ergonomics; occupational safety; innovation; competitiveness; digitalization*

ABSTRACT

Research background: In the era of digital transformation, companies must adopt innovative approaches to ensure competitiveness and sustainability. Ergonomics and workplace safety have become key factors influencing employee efficiency, health, and motivation. The implementation of modern safety solutions, automation, and digital monitoring systems contributes to optimizing working conditions while enhancing operational performance. Understanding the relationship between workplace ergonomics, occupational safety, and enterprise competitiveness is crucial for modern business management.

Purpose of the article: The main objective of this article is to analyze the impact of ergonomics and workplace safety on the competitiveness and innovativeness of enterprises in the digital era. The study seeks to identify how investments in advanced safety technologies, ergonomic workplace design, and digital monitoring solutions contribute to increased productivity, reduced absenteeism, and improved innovation capacity.

Methods: The research is based on a mixed-method approach, combining a literature review with empirical studies. Case studies of selected enterprises that have implemented ergonomic and safety innovations were conducted. Additionally, surveys were carried out among employees and managers to assess the impact of these measures on work efficiency and job satisfaction.

Findings & value added: The study confirms that investments in ergonomics and occupational safety significantly enhance enterprise competitiveness. Companies implementing advanced safety technologies and ergonomic workplace solutions report increased efficiency, reduced employee absenteeism, and higher job satisfaction. Furthermore, fostering a culture of safety and ergonomics facilitates the introduction of innovations, enabling enterprises to adapt more effectively to changing market conditions.

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Analysing the nexus between CO2 emissions and economic and energy variables using ARDL method: The Romanian case

JEL Classification: *C01; O11; L60*
Keywords: *GDP; CO2; Romania; ARDL*

ABSTRACT

Research background: Romania aims to transition to a low-carbon economy by 2045, but its economic reliance on manufacturing and energy-intensive sectors presents significant hurdles. The interplay between CO2 emissions, economic growth, and energy-related factors remains underexplored, despite the country's sustainability commitments. This research investigates how CO2 emissions interact with GDP, manufacturing value added, primary energy consumption (PEC) and electricity generation in Romania over the period 2000–2023, offering insights into the key drivers of emissions within this evolving economic context.

Purpose of the article: The study aims to analyse the short-run and long-run relationships between CO2 emissions and selected economic and energy variables in Romania. We test for the presence of a stable long-run equilibrium among these factors and examine their short-run dynamics and predictive relationships using Granger causality tests. The findings seek to guide policymakers in designing strategies that align economic development with environmental sustainability goals.

Methods: We utilize annual data from 2000 to 2023 and apply the Autoregressive Distributed Lag (ARDL) model to explore cointegration and short-run effects. Granger causality tests are performed on differenced variables to assess directional influences. The model's robustness is verified through diagnostic tests, and the variables' integration properties are considered in the analysis.

Findings & value added: The ARDL bounds test indicates no long-run cointegration among the variables. In the short run, primary energy consumption significantly increases CO2 emissions, while GDP shows no notable effect. Electricity generation contributes positively to emissions, but manufacturing value added has little impact. Granger causality tests suggest weak evidence of PEC predicting CO2 emissions, with no significant causality from other variables. We provide a detailed examination of Romania's CO2 emission drivers, emphasizing the pivotal role of energy consumption over economic growth in the short term. Our policy-relevant findings, highlighting the need for energy efficiency and decarbonization, enrich the understanding of sustainable development in transitioning economies.

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Methodological Innovations aimed at increasing the social impact of scientific research

JEL Classification: *C31; H43; I20; O30*

Keywords: *social impact of scientific research; methodological innovations; social impact assessment; basic and applied research*

ABSTRACT

Research background: Currently, it is possible to observe paying more attention to the selection of methodological approaches that help improve the quality of research conducted at universities and contribute to increasing their social impact. One of the key possibilities in achieving the desired social impact is using methodological innovations based on progressive paradigms and future-forward computing methods. Such possibilities are increasingly recognized by research teams planning and implementing scientific projects. Methodological innovations enrich research processes, facilitate achieving results beyond the state of the art, and enable ongoing assessment of social impact and taking action to increase it.

Purpose of the article: This paper aims to present the research results on the importance of introducing AI-based methodological innovations that help assess and increase the social impact of scientific research on the example of advanced research endeavors.

Methods: The study presented in this paper uses quantitative literature research methods and qualitative and in-depth analysis of information on selected EU-supported R&D activities.

Findings & value added: The factors that contribute to increasing the social impact of scientific research through the introduction of methodological innovations based on modern computing technologies have been identified. The findings allow for the formulation of conclusions regarding the improvement of the research planning process in terms of obtaining the desired social impact of scientific research and supporting continuous analysis and assessment of this impact during the implementation of research projects. Successful planning, achieving, and assessing social impact play significant roles in improving research processes, which become the basis for obtaining high-quality results that are of crucial importance to evaluating researchers and the scientific institutions that employ them.

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Impact analysis of macroeconomic variables on SMEs employment performance in EU countries

JEL Classification: *E01*
Keywords: *SMEs; employment performance; macroeconomic variables*

ABSTRACT

Research background: Empirical evidence confirms that SMEs are major job creators. However, it should not result in less focus on SME development because their contribution to job creation is significant. The macroeconomic factors influence SMEs' decision-making process, i.e., investment strategies, recruitment practices. Earlier studies have analyzed SMEs' role in employment generation from World Bank enterprise survey data. Interestingly, employment, a direct indicator of SMEs' contribution to social and economic stability, lacks empirical evidence.

Purpose of the article: The purpose of this study is to investigates the impact of small and medium-sized enterprise (SME) employment performance on macroeconomic variables across 27 European Union (EU) countries.

Methods: Leveraging descriptive statistics, correlation analysis, and regression modeling, the research evaluates how financial, fiscal, and economic indicators influence SME employment dynamics. The dependent variable, Average Employment, is analyzed against key independent variables, including net turnover, GDP growth, tax rates, inflation, interest rates, and credit availability. Secondary data has been analyzed, sourced from World Bank and EUROSTAT.

Findings & value added: The analysis reveals a strong positive correlation between Average Employment and Net Turnover underscoring the critical role of SME revenue in driving job creation. However, regression results show that this relationship becomes statistically insignificant due to multi-collinearity with closely related financial variables. Paradoxically, GDP Growth exhibits a weak negative correlation with employment, suggesting that economic expansions may not uniformly benefit SMEs, potentially due to automation or sectoral shifts. Other macroeconomic factors, such as Inflation Rate, Interest Rate, and Total Tax, demonstrate negligible statistical significance, highlighting SMEs' resilience to short-term monetary fluctuations and tax pressures. The findings advocate for SME-centric policies prioritizing financial health (e.g., turnover support, tax incentives) over broad macroeconomic interventions.

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Applying AI to ensure sustainable growth of business performance

JEL Classification: *C53; G33; L25; M21*
Keywords: *artificial intelligence; bankruptcy; business performance; mathematical methods; sustainability*

ABSTRACT

Research background: Artificial intelligence (AI) is playing an increasingly important role in measuring the financial performance of companies and ensuring their sustainable growth. It is able to process large amounts of data and perform various analyses that enable targeted and effective processing of solutions to ensure sustainable growth of business performance. In a dynamic business environment, companies face challenges associated with constant changes in the market, growing competition and the need to be efficient and innovative. Artificial intelligence helps businesses streamline processes, improve decision-making capabilities, and increase productivity.

Purpose of the article: The purpose of the study is to explore the possibilities of using AI as a key tool for ensuring sustainable growth of business performance and to apply selected AI techniques in the given field. To find out if the performance of models built based on AI techniques outperforms the performance of other models.

Methods: Research sample consists of Slovak and Czech companies doing a business within construction industry. Elastic net regression is used to indentify most important financial features of businesses in relation to their performance. Using these features, early warning models based on AI techniques and mathematical methods are built to ensure sustainable growth of businesses` performance.

Findings & value added: The results of the study indicate that the AI application in measuring the performance of companies contributes to the long-term and sustainable growth of their performance, mainly by increasing the flexibility of the company in its reactions to changes and supporting innovative approaches to managing the company's performance. At the same time, it represents an early warning tool against a possible decline in performance and impending bankruptcy.

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Does AI labelling matter? Conceptualizing consumer trust and purchase intent in AI-generated advertisements

JEL Classification: *M20; M30; M31; M37*

Keywords: *generative artificial intelligence; consumer trust; consumer purchase intention; digital marketing; AI advertising*

ABSTRACT

Research background: Recent developments in generative artificial intelligence (AI) technology have significantly changed the marketing landscape, allowing companies to automate content generation, improve personalisation, and enhance customer interactions on a large scale. Despite significant excitement for these advancements, consumer perceptions of AI-generated content remain unclear, particularly concerning trust and its subsequent effect on purchase intentions. Marketing literature indicates that trust is crucial in consumer decision-making, influencing both immediate purchasing behaviour and long-term brand relationships. Research has increasingly demonstrated that consumer acceptance of AI-generated advertisements is significantly affected by their awareness of the content's source. However, limited theoretical or empirical research has systematically investigated the impact of explicit AI generation disclosure ("Created by AI") on consumer trust and purchase intent, particularly in contrast to human-generated advertising content across diverse product categories.

Purpose of the article: The purpose of this paper is to provide a foundational understanding of how consumers perceive AI-generated advertisements in terms of trust and purchase intent and how explicit disclosure of AI involvement may influence it.

Methods: This conceptual analysis systematically reviews and integrates key literature related to AI-generated content, consumer trust, and purchase intentions. Special attention is paid to how transparency could theoretically influence consumer evaluations of advertisement authenticity and credibility.

Findings & value added: The paper's conceptual link between AI-generated advertisements and consumer trust and purchase intent has significant implications for marketing practice and theory. It establishes a solid theoretical framework to help marketers responsibly leverage generative AI, while also emphasising the importance and need for reliable empirical research in this rapidly developing field.

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Resilience of international coal enterprises to economic crises from a financial perspective

JEL Classification: *F62; F44; G33*
Keywords: *resilience; economic crisis; financial dimension of resilience; industrial economics*

ABSTRACT

Research background: With the widespread globalization and internationalization of human activities, changes — both beneficial and destructive — are shifting and escalating very rapidly. As a result, the exposure of economies, industries, and the companies operating within them to the risks and effects of the changes that have occurred is increasing.

Purpose of the article: The purpose of the article is to assess the resilience of international coal enterprises to economic crises (the Covid-19 pandemic and Russia's invasion of Ukraine) from a financial perspective.

Methods: The analysis conducted in the article covers the years 2010–2023. It includes 15 international coal companies, which, due to the scale of internationalization, and thus exposure to economic risk, were further divided into three groups. The research methodology is based on financial analysis indicators and econometric modeling of bankruptcy risk.

Findings & value added: The results show an increase in exposure to crisis risks in companies with a higher share of exports in sales. The effects of these risks are manifested primarily in reduced profitability and liquidity. Their impact on the capital structure is considerably reduced. The consequences of cyclical changes are also more severe for all coal companies with a generally weak financial condition. The economic crisis is also more intensely experienced by mining companies in the immediate vicinity of its outbreak. The contribution of the research to industrial economics is to determine the financial consequences of the impact of economic crises on the operation of coal companies and to answer the question of the extent of their crisis resilience.

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Leadership in the metaverse: Algorithmic storytelling, digital gatekeeping, and AI-driven leadership narratives

JEL Classification: *A11; A14; B16*

Keywords: *leadership narratives; AI-driven storytelling; algorithmic gatekeeping; digital influence; computational leadership*

ABSTRACT

Research background: AI-driven digital platforms and algorithmic social media ecosystems have redefined leadership storytelling. Leaders increasingly bypass traditional media by constructing their own narratives through digital platforms, where AI-driven amplification and algorithmic gatekeeping influence visibility and engagement. Despite this transformation, research remains limited on how these mechanisms shape contemporary leadership narratives.

Purpose of the article: This study examines how influential leaders use AI-enhanced digital platforms to create, control, and disseminate their leadership narratives. It explores how algorithmic curation, gatekeeping, and AI-driven engagement patterns impact the credibility and resonance of leadership storytelling. The study aims to establish an analytical framework to understand emerging leadership communication strategies in digital and AI-mediated environments.

Methods: The research employs quantitative content analysis of high-engagement leader-generated content across platforms. AI-assisted discourse analysis and machine learning classification will identify dominant rhetorical structures, authenticity markers, and shifting storytelling strategies. The study will further analyse the algorithmic amplification and digital gatekeeping mechanisms shaping leadership narratives. Further research will build upon the findings to develop an integrative model.

Findings & value added: The research is expected to reveal narrative archetypes, patterns of algorithmic gatekeeping, and shifts in leadership visibility. By bridging digital leadership narratives with computational social sciences, it advances the broader theoretical understanding of leadership communication in the digital era and offers practical insights for leaders by integrating digital influence dynamics.

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Rethinking tourism through innovation and knowledge: A conceptual framework for policy and practice

JEL Classification: *L83; O01; O03; Q56; R11; Z32*

Keywords: *sustainable tourism; rural and luxury travel; heritage preservation; sustainable development goals (SDGs); ecotourism*

ABSTRACT

Research background: Tourism plays a central role in global economic development and cross-cultural exchange. In the wake of the COVID-19 pandemic, there has been a growing focus on integrating sustainability, innovation, and equity into tourism practices. Traditional models have often overlooked the complex interplay of social, environmental, and economic challenges faced by destinations. This has spurred a rethinking of tourism development, driven by community empowerment, climate concerns, and technological advances.

Purpose of the article: The study aims to explore how a transformative approach to tourism can be achieved by centering community participation, embracing sustainability, and incorporating innovative social practices. It focuses on the intersections of social innovation, rural-luxury travel, heritage preservation, and inclusive governance. The authors seek to construct a conceptual framework that captures emerging themes and sub-themes within sustainable tourism, offering practical insights for policymakers and industry stakeholders.

Methods: An integrative review approach was applied, guided by PRISMA methodology. Following keyword extraction, topic modeling was conducted using Latent Dirichlet Allocation (LDA), a widely used technique for discovering hidden topics in text data. Over 12,000 academic sources from the Scopus database were synthesized. A conceptual model was developed through inductive analysis to identify interrelationships between tourism-related themes.

Findings & value added: Key findings highlight the transformative potential of strategies that align tourism practices with environmental stewardship, local empowerment, and innovative management approaches. The study underscores actionable implications such as the establishment of innovation hubs, and cross-sector partnerships, offering pathways to foster a tourism sector that not only supports global sustainable development goals but also ensures long-term community resilience and equitable development.

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Socio-economic drivers of cultural heritage digitization in the EU

JEL Classification: 031; Z1
Keywords: cultural heritage; digitization; socio economic impact

ABSTRACT

Research background: New opportunities for economic growth in the cultural heritage (CH) sector opened with the pandemic. The digitisation of CH is transforming the sector and expanding its role in making CH more accessible globally and stimulating the emergence of new forms of entrepreneurship in tourism and creative industries.

Purpose of the article: This study examines the socio-economic factors affecting the digitisation of CH in the EU

Methods: A theoretical model of the socio-economic determinants of digitisation of CH is proposed and empirically tested using the Generalized Additive Models (GAM) framework and data from all ENUMERATE surveys on digitization of CH (2011–2017).

Findings & value added: The results revealed that the strongest impact on the digitisation of CH is exerted by macro economic and technological factors: the economic wealth of the country, access to high-speed internet. The analysis also found that the level of domestic and inbound tourism is a strong catalyst for digital innovation in the CH sector, as virtual access to CH resources responds to visitor demand. Integrating tourism strategies with the digitisation of CH can increase the economic and cultural impact. The negative correlation obtained with cultural consumption points to the democratisation opportunities opened by the digitisation of CH. At the micro level, the availability of skilled human resources through the involvement of volunteers was a more important factor than the share of financial investment allocated to digitisation, and points to the importance of expertise and cooperation in promoting successful digitisation. These insights point out for necessity to assess post-pandemic changes and to refine strategies for economically viable future of CH.

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How innovation ecosystems shape startup growth: The case of Lithuania

JEL Classification: M13; O31; O47
Keywords: startup; startup growth; growth; innovation ecosystem; hi-tech

ABSTRACT

Research background: Today probably there is no government that doesn't have measures to promote startups on its agenda. The consensus is that startups are young, innovative and fast-growing businesses.

Purpose of the article: The aim of this study is to identify the key innovation ecosystem factors influencing the growth of startups at different stages of their development, analysing how these factors differ between startups and other hi-tech companies. The study analyses the growth drivers of startups and other hi-tech companies in Lithuania's innovation ecosystem.

Methods: The Birch Index turnover metric is used to standardize turnover growth, followed by the application of a K-means clustering approach and Principal Component Analysis (PCA) to identify distinct startup types. To analyze the relationship between innovation ecosystem variables across startup and hi-tech groups, a multivariate regression framework is implemented, combining Ordinary Least Squares (OLS) and Generalized Additive Models (GAM).

Findings & value added: The results revealed substantial differences across the groups, as well as heterogeneous effects that are specific for each startup type. In general startups are more exposed to innovation ecosystem factors than other high-tech companies, and the impact of these factors depends on the type of startup development. For young fast-growing start-ups, access to markets is particularly important, for lower-growth startups financial support is important, while the amount of venture capital has a positive effect on exclusively young start-ups, and mature startups did not show sensitivity to any of the drivers. As the impact of the ecosystem varies between different types of startups, understanding these dynamics is important for the design of effective policies to foster startup growth and competitiveness.

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Political feasibility of green transition policies from the perspective of individual fiscal preferences

JEL Classification: *D91; E62; H23; H63; Q58*

Keywords: *public debt; green transition; fiscal instruments; fiscal preferences; climate policy*

ABSTRACT

Research background: Green transition is a challenge for EU countries as its implementation faces obstacles. In Poland, the slow progress of green investments is mainly due to the lack of coherent climate strategy, social reluctance towards the green transition and a negative perception of public debt. With this in mind, the study analyses the most politically feasible instruments from the perspective of Polish society and the possibility of influencing individual preferences for climate policy implementation.

Purpose of the article: This article examines social preferences regarding government fiscal measures to counteract climate change and examines the extent to which social preferences can be shaped by the information provided. The following hypotheses have been formulated: H1: Specific social preferences regarding green investment financing modes can be revealed. H2: Individual preferences regarding the propensity to green transition and the choice of financing instruments can be influenced by the information provided to respondents characterised by profiles of negative public debt perception and high fiscal conservatism.

Methods: A survey was conducted among three representative samples, a total of 1,050 respondents from Poland. The respondents' perceptions of fiscal instruments were examined using the behavioural economics approach. The significance of the obtained results was verified using statistical analysis methods. The relationships between selected variables were also modelled using logit regression.

Findings & value added: The study fills the research gap on preferences for financing the green transition depending on the information received by respondents and their individual perceptions of public debt. The conducted anlysis reveals that the respondents' aversion to debt as an instrument for financing the green transition decreases thanks to the application of the framing method, despite their initially limited preference for debt. The applied experiment shows that political opposition to both green investments and public debt growth could be reduced through communication with voters.

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Evaluating decentralization in OECD countries: An analysis of relationships using PLS-SEM

JEL Classification: *C1; H7; O3*
Keywords: *local government; decentralization; PLS-SEM*

ABSTRACT

Research background: Decentralization is a complex phenomenon that encompasses multiple dimensions. This paper focuses on two key aspects: administrative decentralization, which relates to the distribution of decision-making authority, and fiscal decentralization, which pertains to the allocation of financial resources.

Purpose of the article: Recognizing the difficulties in capturing the multifaceted nature of decentralization, this study proposes the use of the PLS-SEM (Partial Least Squares Structural Equation Modelling) method. This approach is particularly suited to analyzing the relationships between various dimensions of decentralization, accounting for both direct and indirect interactions.

Methods: The PLS-SEM method facilitates a detailed examination of decentralization in OECD countries by modeling the interdependencies between its administrative and fiscal dimensions. This methodology provides a comprehensive and nuanced understanding of the decentralization process.

Findings & value added: The study confirms a strong positive relationship between financial decentralization and administrative decentralization, highlighting the importance of financial autonomy for improving SNG administrative efficiency. Key factors driving this relationship include SNG debt management and wage expenditures, underscoring the need for targeted fiscal and administrative reforms. These findings expand prior research by revealing the mechanisms linking financial and administrative decentralization, offering actionable insights for policymakers to enhance fiscal stability and public sector performance.

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Building the resilience of logistics companies through selected stakeholder groups

JEL Classification: *L29; L9011*
Keywords: *resilience; logistics; transport; stakeholders; cooperation*

ABSTRACT

Research background: Logistics companies are a vital link in most global supply chains and improve the performance of their partners by optimising costs, increasing delivery reliability and flexibility of operations, and improving logistics organisation. It is important to note that the logistics industry, through its role in serving other sectors of the economy, is susceptible to any disruption that causes the slowdown in those sectors. The topic of organisational resilience is addressed in the context of the logistics industry but in a particularised and fragmentary way. Stakeholders' involvement in creating logistic companies' resilience is rarely mentioned or researched.

Purpose of the article: This article is the Authors' attempt to fill the identified gap and aims to examine organisational resilience implications for logistics industry stakeholders. This article focuses on both internal and external stakeholders.

Methods: The analysis was conducted on data from a survey study based on an original questionnaire, carried out among managers and employees of logistics companies. Methods dedicated to examining dependencies between qualitative variables were used, in particular: the chi-square test, the Kruskal-Wallis test, and correspondence analysis.

Findings & value added: It was possible to confirm and clarify the identified research gap, namely that the awareness of the need to engage stakeholders in building the resilience of logistics companies does not translate into real actions in this direction. Further actions are necessary to encourage companies to really engage their stakeholders in activities that build resilience. Further research should focus on conscious actions and strengthening the existing relations with different stakeholders to boost logistics companies' resilience.

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Labour market barriers faced by migrants workers: Example of regions at the external border of Poland and the EU

JEL Classification: *C400; D22; F22; J610; J230; J400*
Keywords: *statistic; empirical analysis; migrant worker; labor shortage; labour market*

ABSTRACT

Research background: The outflow of the native working-age population is a significant challenge for the development of border areas. Therefore, the focus was on ba-ding enterprises located at the external border of Poland and the EU.

Purpose of the article: The aim of the study was to identify barriers in the context of shortages of workers in the domestic labour market and to supplement them with immigrants from Ukraine.

Methods: The multiple correspondence analysis was used to illustrate the relationship between the occurrence of individual barriers to the employment of migrants (economic migrants, refugees) reported by entrepreneurs. The data source was the original study questionnaire, which made it possible to determine the type/kind of migrants and to identify the barriers to their entry into the labour market. It covered 400 enterprises, 100 from each surveyed cross-border voivodeship of eastern Poland. The research was funded by an internal grant from WNE UWM in Olsztyn.

Findings & value added: As far as refugees are concerned, the greatest barriers include insufficient knowledge of the language, strong competition and the migrant's reluctance to adapt to new conditions and to improve their qualifications. On the other hand, the main barriers to the employment of economic migrants are poor databases on migrants and limited substantive support from the Polish state and the EU. The employment of this type of employee is frequently seen as a source of conflict within the company, as he/she is perceived by colleagues as competition. The impact of various barriers in today's changing environment, the globalisation of migration processes and the geopolitical situation results in changes in the perception of certain trends and how they are defined. In this paper, the definition of a migrant worker has been developed and enhanced to include psychological aspects.

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Creative industries innovation diffusion networks: Systematic literature analysis

JEL Classification: *Z19; O00; D85; L14*
Keywords: *creative industries; innovation; network; diffusion*

ABSTRACT

Research background: Innovation is the main factor determining the growth of the creative industries sector, however, it also emphasizes the importance of creative industries to the innovation process in a wider economy. Synergies between creative industries and companies in other sectors of the economy create conditions for the diffusion of new technologies. Companies in creative industries usually use a large heterogeneous network of relationships, which helps to ensure easy access to new knowledge and faster assimilation.

Purpose of the article: To present a systematic literature review of research papers regarding creative industries innovation diffusion network analysis and identify future research directions.

Methods: This paper conducts a systematic literature review of 55 articles published in the Web of Science database, focusing on innovation diffusion networks within the creative industries.

Findings & value added: The study highlights that innovation diffusion within the creative industries exhibits positive effects both within the sector and across the broader economy. The review further reveals that qualitative and mixed-method approaches dominate the current research landscape, indicating a need for more robust quantitative modeling in future studies. The results of scientific research analyzing the impact of innovation diffusion networks on the creative industries sector have shown that existing networks have a significant impact on the social and economic environment of other industries, regions, and the national economy. Although the authors emphasize the importance of networks for the diffusion of innovations in the creative industries sector, only a few empirical studies have focused on identifying these networks.

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Revenue of municipalities located in protected areas and their tourism activities

JEL Classification: *O18; O44; R12; Z32*

Keywords: *diversification of municipalities; protected areas; revenue of municipalities; tourism*

ABSTRACT

Research background: Protected areas possess unique and valuable natural, scenic, scientific, and socio-cultural resources and values. The natural conditions present in a given area are becoming an increasingly important factor in determining the development opportunities of individual territories. On the other hand, protected areas restrict economic activity and market opportunities. This can affect the well-being of local communities that live and work in these areas. Despite this, the majority of the available studies proves the positive impact of the operation of protected areas on the socio-economic development of local communities and income growth, and employment levels. The main factor in these positive effects is the possibility of more intensive development of tourism and recreational services.

However, municipalities covered by protected areas do not constitute a uniform group of entities, representing considerable diversity in terms of development, which is measured by revenue of budget of local units.

The identification of the various factors influencing the income levels of municipalities covered by protected areas is essential for development policy planning and formulating local strategies.

Purpose of the article: The aim of the article is to assess the diversity of revenue of various types of municipalities covered by protected areas, as well as to evaluate the relationship between the revenue and their tourism activities, compared to other gminas (municipalities) in Poland.

Methods: Research methods adopted in the article: statistical data analysis including dynamic analysis, comparative analysis, analysis of variance Anova, correlation analysis.

Findings & value added: Municipalities covered by protected areas develop in different ways. This article addresses the relatively rarely discussed issue of the diversification of these municipalities in terms of income in the context of various factors, including tourism activities, using advanced statistical methods.

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Effectiveness of the Green Deal implementation in EU

JEL Classification: *Q01; Q58; C61*
Keywords: *European Green Deal; DEA; effectiveness; European Union*

ABSTRACT

Research background: The European Green Deal (EGD) is a package of policy initiatives launched by the European Commission in December 2019 that aims to put the European Union (EU) on the path to a green transition and to achieve climate neutrality by 2050. A critical challenge in implementing the EGD is a continuous and efficient monitoring of EU countries progress.

Purpose of the article: The aim of this study is to assess the efficiency of the implementation of the EGD in European countries by using the 26 indicators introduced by Eurostat as a comprehensive benchmarking framework. The ranking of U countries on the basis of their relative effectiveness in achieving EGD objectives and systematically assess differences in performance will be presented.

Methods: Data Envelopment Analysis (DEA) as a methodological tool will be employed. It allows to assess relative efficiency in multidimensional contexts and for the simultaneous assessment of multiple inputs and outputs without the need for predefined weights.

Findings & value added: Sweden, the Netherlands, Belgium, Austria, Estonia and Hungary achieved the highest efficiency in implementing the objectives of the Green Deal. Lithuania, Bulgaria, Croatia, Spain, Slovenia and Ireland scored the lowest, indicating the need for additional measures. The DEA analysis confirmed significant differences between EU countries, underlining the need for further monitoring of the efficiency of Green Deal implementation. Estonia has maintained its high efficiency in implementing the Green Deal and secured a stable place at the top of the ranking from 2013 to 2021. Poland recorded a decline in efficiency and is ranked 23rd in 2021, indicating the need to step up efforts towards sustainable development.

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Developing sustainable supply chain networks under global uncertainty

JEL Classification: M11
Keywords: supply chain; sustainable supply chain; network; global uncertainty

ABSTRACT

Research background: An efficient supply chain is a prerequisite for the sustainability of businesses. Only the smooth operation of all supply chain elements ensures that a company can deliver products and provide services on time, considering changes in the environment and the disruptions in the supply chain caused by them. The shock caused by the pandemic, political and commercial restrictions, and natural disasters disrupt the supply chain for a long time. After recovering, companies are strategically choosing to create more sustainable, resilient, and flexible supply chains that would improve business results and reduce the impact of operational uncertainties. Most companies lack the skills and understanding on how to systematically develop a sustainable, flexible, adaptive, and at the same time resilient supply chain partner network based on new technological capabilities that would help meet changing consumer expectations and take advantage of market opportunities. Therefore, the problem of this research is how to develop sustainable supply chain networks in conditions of global uncertainty.

Purpose of the article: after conducting an analysis of the latest scientific literature on sustainable suppy chain management, to assess the efforts used by companies to develop sustainable supply chain networks under global uncertainty.

Methods: theoretical literature analysis was employed for literature review; qualitative research of interview was used to conduct the empirical research; the case study method was used to examine the best practices of specific companies.

Findings & value added: Based on the essential dimensions of sustainability, the study assesses the totality of organizations' network development efforts in recent uncertainty situations caused by pandemics, wars, etc. impacts on supply chains. The assessment of these experiences helped to form a model for the development of sustainable supply chain networks of companies and to prepare recommendations for its implementation for organizations constantly operating in global uncertainty.

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Modeling and forecasting exchange rate structure and dynamics using graph neural networks

JEL Classification: *C45; F31; G17*
Keywords: *graph neural networks; currency forecasting; deep learning*

ABSTRACT

Research background: Exchange rate forecasting is a key issue in finance and economics. Predictive models support investors and financial institutions in decision-making and risk management. Traditional models, such as ARMA, analyze time series independently, ignoring the interrelationships between currencies. However, currency exchange rates form a dynamic network of relationships that can be effectively modeled using graph neural networks (GNN). In recent years, the growing interest in GNNs in the analysis of financial data suggests their potential advantage over classical statistical methods.

Purpose of the article: The aim of the study is to evaluate the effectiveness of GNN in forecasting exchange rates. Special attention will be paid to the analysis of structural relationships between currencies and their impact on the accuracy of forecasts.

Methods: The analysis includes time series of 15 major world currencies over the past three years. The structure of the currency network is created based on correlations between currencies, where nodes represent individual currencies and edges map their interdependencies. The GNN models used encompass a wide range of architectures, including graph convolutional networks (GCN), autoencoders (GAE), and graph attention networks (GAT). A key mechanism of GNNs is message passing, which propagates information between graph nodes, enabling better modeling of currency interactions. Network centralization analysis will identify the key currencies that have the greatest impact on the overall market structure. The results of the forecasts obtained using GNN will be compared with those from the ARMA model, and will be evaluated using ex-post forecast errors.

Findings & value added: GNNs are expected to make more accurate predictions by accounting for structural relationships between currencies. The study will indicate to what extent these models can outperform classical statistical methods. The results may have practical applications in the analysis of financial markets, supporting investors and analysts in their decision-making.

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Measuring SMEs' organizational capabilities towards dynamic financial resilience

JEL Classification: M10; L20; L29
Keywords: financial resilience; capabilities-based approach; SMEs; SEM method

ABSTRACT

Research background: Financial resilience is crucial for an organization's survival and sustainable growth, particularly during global disruptions. While scholars agree that financial resilience is a multidimensional construct with no single comprehensive indicator, there is no consensus on its creation, measurement, or preservation. Moreover, despite the important role that SMEs play in the economy, research focused on this topic remains limited and fragmented.

Purpose of the article: The objective of this study is to propose and validate a dynamic and financial management capabilities-based approach for measuring SMEs' financial resilience before, during, and after market disturbances.

Methods: Research data was collected through an online survey of 256 SME entrepreneurs using an original research instrument. This instrument integrated a dynamic approach with four key financial management capabilities: profitability, working capital management, asset management, and financing. A summated scale assessed SMEs' resilience levels, while SEM analysed the direct and indirect effects of financial resilience enablers.

Findings & value added: Our research validated the proposed approach and questionnaire, demonstrating SMEs' above-average dynamic financial resilience. Resilience levels were higher in the proactive and reactive phases than in the responsive-adaptive phase. Results confirmed that SMEs' internal controls and entrepreneurs' financial knowledge positively impact overall resilience. From theoretical perspective, the financial resilience scores obtained in study can serve as a valuable benchmark for assessing SMEs' financial resilience across different countries, offering insights into how SMEs. From policy perspective, study results revealed that SMEs financial resilience drops when a disruptive event occurs and at this stage governmental programs and actions would be most effective in helping SMEs to survive, recover, and grow. Moreover, government institutions and professional organizations should focus on delivering financial literacy programs to help entrepreneurs build financial knowledge and capabilities as well as promoting social interaction through associations and ensuring a healthy family-business balance.

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Barriers to studying in the Czech Republic: A qualitative study with Nigerian students

JEL Classification: *I23; J24; F22; R23*
Keywords: *Africans; barriers; Czech Republic; pre-arrival; post-arrival study; visa*

ABSTRACT

Research background: In recent years, there has been a noticeable increase in the number of African students opting for non-traditional destinations for their higher education, with the Czech Republic emerging as a popular choice. Among these students, those from Nigeria face particular challenges related to language barriers and complex administrative processes. These obstacles significantly affect their academic, social, and professional experiences in the country.

Purpose of the article: This study seeks to explore and understand these challenges in the context of the Czech Republic.

Methods: The research is carried out by conducting qualitative research using semi-structured interviews to gain insight into the experiences of Nigerian students in both the pre-arrival and post-arrival phases. By examining these two phases, the study aims to uncover the impact of these barriers on their overall adaptation and integration into Czech society, providing valuable recommendations for improving their experience.

Findings & value added: The findings indicate that the visa application process is the most significant pre-arrival challenge. Many students encounter delays and complex bureaucratic requirements that can cause delays in arrival. Upon arrival, language proficiency emerges as a major challenge. Many students struggle with limited Czech language skills, which affects their ability to navigate public services, interact with the local community, and handle bureaucratic procedures. Furthermore, language barriers hinder their ability to find part-time employment, as many jobs require basic Czech proficiency. This limits students' financial independence and contributes to social isolation. The findings highlight that the visa application process and language barriers are the most significant challenges for international students in the Czech Republic. Addressing these obstacles through improved administrative support and language programs could help enhance students' integration, financial independence, and overall experience.

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Shaping sustainable cities: Leisure mobility trends among young residents of the GZM Metropolis

JEL Classification: *R49; Q01; R58*
Keywords: *leisure mobility; sustainable mobility; mobility of young adults*

ABSTRACT

Research background: The post-pandemic shift in working patterns (the spread of remote and hybrid working), can lead to significant changes in daily mobility patterns. These changes may raise questions about their impact on leisure travel behaviour, modal choices and urban transport sustainability. Understanding how young citizens of the GZM Metropolis use their leisure time and how they fulfil their mobility needs is crucial for shaping policies that support sustainable mobility and urban development.

Purpose of the article: This study investigated how work organisation influences the leisure-time mobility patterns of residents of the GZM Metropolis, aged under 35. It investigated whether increased time autonomy have an impact on changes in leisure-time activity preferences, travel frequency and transport mode choice. The findings contribute to the discussion on sustainable urban mobility policy.

Methods: The survey used a mixed-methods approach, combining desk-based research with a computer-assisted online survey (CAWI) conducted in October 2023. The survey targeted a stratified quota sample of 121 respondents aged 18–35 years, ensuring demographic and spatial representativeness. The questions focused on respondents' perceptions of changes in the availability of leisure time due to the spread of flexible forms of employment, leisure preferences and transport behaviour.

Findings & value added: The results indicate that while remote and hybrid work may increase flexibility in time management, it does not directly lead to more frequent leisure-related travel. Recreational mobility in the GZM area largely relies on car transport, posing a challenge to developing a sustainable urban mobility model that also considers leisure travel. The study highlights the need for greater attention from policymakers to the impact of "unsustainable" leisure mobility on balancing urban transport systems. By linking changes in recreational behaviors with transport policies, it provides valuable insights for policymakers, planners, and researchers working on sustainable mobility and transport strategies.

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The impact of Artificial Intelligence on task performance and decision-making of unversity students

JEL Classification: A23; O15; O32
Keywords: Artificial Intelligence; AI; performance; human-AI collaboration; decision-making

ABSTRACT

Research background: Artificial Intelligence (AI) technologies are reshaping multiple sectors, with higher education experiencing a growing integration of AI tools to support learning, task management, and decision-making. Despite this trend, empirical evidence on AI's direct impact on task performance, decision-making efficiency, and cognitive skills development in academic settings remains limited. Understanding AI's role in enhancing or potentially impeding student performance is critical for developing effective educational strategies and preparing graduates for an AI-driven workforce.

Purpose of the article: This study investigates the influence of AI-assisted tools on the task performance of university students and the quality of decision-making. Specifically, it examines whether varying levels of AI access affect time efficiency, problem-solving effectiveness, and the quality of academic outputs.

Methods: A controlled experiment was conducted with university students assigned to three groups: full AI access, limited AI access, and no AI access. Participants completed complex tasks and decision-making exercises modelled after EPSO and JTS selection assessments, designed to measure analytical reasoning, problem solving, and time management under pressure. Quantitative data on task completion time, decision accuracy, and output quality were collected and analysed using statistical methods.

Findings & value added: This study hypothesises that greater AI access enhances time efficiency and decision-making accuracy, but may lead to over-reliance, potentially limiting independent critical thinking. By testing these hypotheses, the research provides empirical insights into the role in academic performance and offers recommendations for balanced AI adoption. The outcomes are expected to contribute to the discourse on digital literacy, cognitive skills development, and workforce readiness in AI-enhanced learning environments.

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International trade from regional perspective: The role of special economic zones and local factors in fostering new exporters' emergence

JEL Classification: *F14; R12; H71; C21*
Keywords: *special economic zone; new exporters; foreign trade; spatial panel models; LAU 2*

ABSTRACT

Research background: International economics did not pay explicit attention to the spatial distribution of economic activity. The question of 'how' to produce was usually more important than 'where' to produce. The spatial dimension was always present in the core of international economics, but represented by countries, while internal heterogeneity within countries was often overlooked.

Purpose of the article: The paper aims to assess: (i) factors affecting the agglomeration of exporters at the local level (LAU 2), (ii) the extent to which the establishment of a special economic zone (SEZ) in a municipality can generate agglomeration economies for exporters and neighbouring areas.

Methods: To assess the role of specific factors affecting the emergence of new exporters, we use a series of spatial probit/logit panel models with fixed and random effects, calculated at the LAU 2 level for the Polish economy. Since place-based policies, such as the operation of special economic zones, may significantly affect the propensity of new exporters to emerge, we control for this public policy instrument, together with a series of covariates. These include transport links, internal geography, institutional variables, local economic factors and agglomeration economies.

Findings & value added: The results acknowledge the significant role of economic factors related to economic activity, together with the role of proximity to infrastructure endowments, the border, the operation of foreign-owned enterprises and economic diversity. However, due to the numerous locations of SEZ subzones in Poland, potential externalities from their operation are negligible, which has significant policy implications related to the location of privileged areas worldwide.

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Disinformation in the digital economy: A game theory perspective

JEL Classification: *A14*
Keywords: *sociology of economics; disinformation in the digital economy; contemporary issues in economy*

ABSTRACT

Research background: In the growing new economy based on the digital environment, the problem of disinformation affects the decision-making process as well as markets and consumers. This paper aims to explore the concept of disinformation in the digital economy using game theory to understand how economic agents (firms, platforms and users) interact in a complex environment of information.

Purpose of the article: The general objective of this research is to describe the processes that determine the role of disinformation in economic decisions and the relationships between different subjects.

Methods: Using game theory as a theoretical framework, this study examines situations in which economic agents deliberately spread or increase levels of misinformation while trying to reduce their levels of uncertainty and risk. However, the article also outlines some options for reducing the negative effects of disinformation, including regulatory measures, market mechanisms and public awareness campaigns.

Findings & value added: The study shows that, in many cases, a number of economic agents can find themselves in a "disinformation trap", where rational action by each agent results in sub-optimal collective action that is detrimental to the performance of the digital economy. The results of the study also show that ensuring proper enforcement and verification of information can greatly reduce the spread of disinformation, but the effectiveness of these measures depends on the costs associated with them and the level of user engagement. As a result, without proper incentives to combat disinformation, digital platforms and users will continue to rely on the default setting that favours content that goes viral, regardless of its accuracy. The conclusions point to the need for an integrated strategy that includes regulatory measures, technological interventions and educational initiatives to counter the negative effects of disinformation.

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A patient perspective on disparities in access to healthcare

JEL Classification: *I31; I38; J15; J24; Z13*
Keywords: *disparities; barriers; Czech Republic; healthcare; access*

ABSTRACT

Research background: Access to healthcare is still a major discourse around the world. Socioeconomic and cultural differences within the current globalization strategy are important factor influencing the potential barriers people face in seeking appropriate healthcare. This is also related to the designation of potentially vulnerable pople/ vulnerable groups.

Purpose of the article: The study aims to identify potential barriers to access to healthcare for people who are identified as vulnerable.

Methods: The work was constructed as qualitative research using the semi-structured interview technique. People from outside vulnerable groups were deliberately selected to identify the full spectrum of variables. Data analysis was performed using standard methodology, which included coding and categorization.

Findings & value added: The results point to an extended list that can be classified into three types of barriers according to the occurrence level: patient, provider, and system. Barriers at the patient level are classified mainly within the socioeconomic situation of the family or individuals, also taking into account family or work responsibilities and the availability of childcare. The provider level points to language barriers, cultural insensitivity, low trust, inappropriate environment, and low staffing. Systemic barriers focus on the distribution of healthcare facilities, low knowledge of the majority population, low coverage of the field of inquiries, uncertainty about the covered services from mandatory insurance, medical prices, availability of care, or other unexpected expenses associated with treatment (loss of employment). The study points to possible variables that limit people subjective perception as factors leading to postponement or absence of healthcare. A suitable solution is to ensure a sufficient number of health and social services to help people at risk, support transportation, or find a suitable service for acute/chronic treatment that would be less financially burdensome for low-budget entities.

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Reward, punishment, or self-determination? Workers' perceptions of motivations for engagement in green transition in the workplace: A study from Central Europe

JEL Classification: *D91; Q56; C38*

Keywords: *motivation; Self-Determination Theory; green transition in the workplace; principal component analysis (PCA)*

ABSTRACT

Research background: Drawing on Self-Determination Theory (SDT) and behavioral economics, an assessment and grouping of the motives driving engagement in green transition in the workplace were conducted. The distinction between intrinsic and extrinsic motivation was employed, further subdividing motives into autonomous and controlled categories. Additionally, the division of regulations into internal and external regulations was applied.

Purpose of the article: The article aims to determine the workers' perceptions regarding autonomous and controlled motivators in the context of their engagement in green transition initiative or activities in their workplace.

Methods: A review of the scientific literature and principal component analysis (PCA).This study utilizes data from an online diagnostic survey based on an original questionnaire, conducted among workers aged 18–69 within a representative research sample in Poland, the Czech Republic, Slovakia, and Slovenia.

Findings & value added: The findings indicate that the system of controlled regulations such as rewards and, in particular, punishments, are less effective than motives fostering autonomous action, including professed values or the opportunity to apply one's competencies. The study provides new knowledge on effective ways to encourage workers to engage in pro-ecological activities in the workplace. Furthermore, the article identifies which regulations are more likely to be perceived by workers as integrated or internalized within the framework of SDT, and, consequently, more effective.

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Overcoming the global crisis: Economic and geopolitical impacts of the COVID-19 pandemic

JEL Classification: *E20; E30; E32; G01; H12; I15; O40*

Keywords: *world economy; coronavirus; financial and economic crisis; instittionalization of the crisis; sixth technological order*

ABSTRACT

Research background: The COVID-19 pandemic and its resulting economic crisis have become some of the most significant global challenges in recent decades. Experts refer to a "new reality" where not only national health systems but also entire sectors of the economy must adapt.

Purpose of the article: The study aims to identify the key features of the modern global crisis and explore the anti-crisis measures necessary to overcome the challenges posed by the COVID-19 pandemic. It focuses on analyzing the crisis management strategies of EU countries and identifying critical areas of economic support provided during this period.

Methods: The article uses a comparative approach to examine crisis management models across different countries. The research involves reviewing secondary sources like reports and case studies to assess the crisis's effects and the measures implemented to address them.

Findings & value added: The study identifies recovery models for the global economy, using examples from various countries. The article concludes that the COVID-19 pandemic has become a major economic and geopolitical crisis, potentially leading to a significant transformation in the global economic order. One possible outcome is the "virtualization" of the economy and the transition to the sixth technological paradigm.

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Impact of sustainable public finances on the achievement of environmental sustainability goals

JEL Classification: *H62; H63; Q01*
Keywords: *sustainable public finance; sustainable development; environmental proteciton*

ABSTRACT

Research background: The sustainability of public finances has important implications for the functioning of the public sector and the delivery of its services. One area that depends on the soundness of public finances is environmental protection. Achieving environmental sustainability goals requires public funding. As pointed out by Bacchiocchi et al. (2011), high levels of public debt may limit investment in renewable energy infrastructure by diverting resources to servicing debt obligations rather than financing sustainable projects. On the other hand, Afshan et al. (2024) found that in emerging economies, external debt hinders green growth. This suggests inefficiencies in the use of debt for sustainable development. Young and Roncisvalle (2002), show that environmental spending declined in Brazil as public debt and its servicing costs increased. Although these results are based on studies for a single country, they point to an important problem.

Purpose of the article: The aim of this article is to assess the impact of the sustainability of public finances on the achievement of environmental sustainability goals in European Union countries.

Methods: In this paper, the relationship between variables reflecting the level of achievement of sustainable development goals and variables reflecting the level of fiscal sustainability will be shown by means of a panel model.

Findings & value added: The article shows the impact of sustainability of public finances on the achievement of some of the sustainable development goals. This impact is not clear-cut, as increasing public debt creates opportunities to increase public spending, including for environmental purposes. At the same time, however, the constraints associated with excessive unsustainability of public finances result in a reduction in spending that is not considered a priority.

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Patterns of energy expenditures in Polish households: A socio-economic analysis in the context of energy transition

JEL Classification: *D12; Q41; I32; R22*
Keywords: *household; spending; consumption; maintenance of the apartment/house*

ABSTRACT

Research background: Energy expenditures constitute a crucial component of household budgets, accounting for nearly 60% of total housing-related expenses and approximately 9% of disposable household income. They significantly impact the financial well-being of various social and economic groups. Given the ongoing energy transition and rising energy costs, understanding household energy consumption patterns is essential for designing effective social and energy policies. Identifying vulnerable groups at risk of energy poverty is particularly relevant in the context of a sustainable energy transition.

Purpose of the article: This article aims to determine patterns of energy expenditures in Polish households and identify the economic and socio-demographic groups most exposed to high energy costs and energy exclusion. Additionally, the study examines the energy sources used in the context of the ongoing energy transition.

Methods: The study is based on individual data from the Household Budget Survey for the years 2018 and 2023, covering 36,166 and 28,089 cases, respectively. The data underwent statistical analysis, including a comparison of expenditures on different energy carriers based on household income and socio-demographic characteristics. Cluster analysis was applied to identify household types and patterns of energy expenditure.

Findings & value added: The study identified several household groups with distinct energy carrier utilization patterns. The findings contribute to a deeper understanding of how economic and demographic variables characterizing households influence the energy transition process. Moreover, the study provides valuable insights for energy and social policy, ensuring that the needs of various social groups are considered in policy-making.

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Current researchscape on Artificial Intelligence in influencer marketing: Tendencies and perspectives

JEL Classification: *M31; M37; O32*

Keywords: *AI; artificial intelligence; bibliometric analysis; influencer marketing; SCOPUS database*

ABSTRACT

Research background: Recent years have been marked by a tremendous growth of the usage of artificial intelligence (AI). Many business organizations are applying this technological development to enhance their operations and facilitate daily tasks. Influencer marketing is one of the scopes where the usage of AI becomes inevitable.

Purpose of the article: The purpose of this paper is to analyze the current state of research on AI in influencer marketing and provide the core guidelines for further exploration of this field.

Methods: Bibliometric analysis of scientific literature is performed to establish guidelines for further research in the field of AI in influencer marketing. The article selection procedure encompassed steps indicated in Preferred Reporting Items for Systematic Reviews and Meta-Analyses methodology. The keywords reflecting the chosen field were determined: "artificial intelligence" or "AI" and "influencer marketing". The Scopus database was chosen as a background.

Findings & value added: The review revealed that the field is rapidly evolving and attracting new researchers. The emerging field has attracted researchers from 28 countries so far; Australia, the United States, the United Kingdom, and India were named as the leading countries. The keyword analysis revealed the need for purification of terminology. The terms 'AI influencer', 'AI-generated influencer', 'digital influencer', and 'virtual influencer' were used to describe the same phenomenon. Also, 5 emerging research trends were determined: (1) AI influencer feature determination and analysis; (2) consumer behavioral reactions towards the AI influencers; (3) platforms, medias and networks used by AI influencers; (4) marketing strategies to be used by AI influencers; and (5) suitability and appropriateness of research methods in AI influencer marketing.

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Achieving energy efficiency in the energy transition: The example of hydrogen

JEL Classification: *O4; Q2; Q4*
Keywords: *energy efficiency; hydrogen energy; climate change; energy balance; energy solutions*

ABSTRACT

Research background: Attention is drawn to global climate change and the need to review the energy balance structure. This requires increasing the efficiency of energy use and developing more environmentally friendly solutions to meet energy needs, particularly based on hydrogen use.

Purpose of the article: The article studies hydrogen as a promising energy source capable of transforming the energy balance structure. The main goal is to analyze the prerequisites, current trends, and prospects for the development of hydrogen energy in Ukraine and Europe.

Methods: The study includes an analysis of hydrogen types depending on its production technology, particularly ecological "green" hydrogen. Comparative analysis methods were used to assess the advantages and disadvantages of hydrogen, an analysis of the typology of energy resources and determining the place of hydrogen in their structure. The method of economic calculation of hydrogen energy efficiency was applied.

Findings & value added: The key advantages of using hydrogen include increasing energy efficiency, reducing CO_2 emissions, integrating renewable energy sources, and the prospects for use in various industries. The types of hydrogen and their environmental friendliness are characterized. The environmental aspect of hydrogen production is studied, with special attention paid to "green" hydrogen produced from renewable energy sources. The key practical aspects of introducing hydrogen in the energy, transport, and other sectors are characterized. The safety issues of using hydrogen are analyzed, including storage, transportation, and production. The benefits of introducing hydrogen energy are studied, including integrating renewable energy sources and ensuring energy security.

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Validating the six-factor framework of leadership and safety practices in South African manufacturing SMEs

JEL Classification: *D81; J28; M21*

Keywords: *safety culture; South Africa; SMEs; manufacturing; model validation or phrases*

ABSTRACT

Research background: While research on safety culture has been carried out in various sectors, including food, aviation and construction, there remains a significant gap in studies specifically addressing safety culture within the manufacturing industry in South Africa. This gap underscores the importance of exploring the perceptions of employees regarding the factors that shape safety culture within the South African manufacturing SMEs in which they are employed.

Purpose of the article: To validate a model of factors that influence safety culture within South African SMEs in the manufacturing industry.

Methods: A cross-sectional convenience sample of 500 South African employees, aged 18 to 65, working in manufacturing SMEs across South Africa, was selected from a panel provided by a local market research firm. Data was collected using a structured, self-administered questionnaire designed to assess employees' perceptions of the organisational factors that shape safety culture in these SMEs and how these factors influence their safety compliance behaviours.

Findings & value added: The findings indicated that the hypothesised model has acceptable reliability and good model fit. Consequently, the hypothesised model comprises six factors, namely management commitment, safety incentives, safety training, safety communication and feedback, safety compliance and safety culture. SMEs in manufacturing may use this model to develop a more thorough understanding of the factors that influence safety culture to foster a strong safety culture within their enterprises.

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Exploring the impact of digital orientation on financial performance in family-owned SMMEs: A comparative analysis of South Africa and Poland

JEL Classification: *M15; M31; M49*

Keywords: *digital orientation; financial performance; family-owned SMMEs; digital transformation; South Africa; Poland*

ABSTRACT

Research background: Digital transformation has emerged as a crucial determinant of business success, particularly for Small, Medium, and Micro Enterprises (SMMEs). Digital orientation encompasses adopting digital business models, expanding online commercial activities, implementing digital marketing strategies, and enhancing social media utilisation. Financial performance is assessed through indicators such as financial security, cash flow stability, and the ability to meet financial obligations.

Purpose of the article: This study examines the impact of digital orientation on financial performance in family-owned SMMEs in South Africa and Poland.

Methods: The study follows a descriptive research design and utilises data collected from 291 family-owned SMMEs in South Africa and 300 from Poland.

Findings & value added: The results of the study indicate that digital orientation has a more substantial impact on financial performance in Polish family-owned SMMEs compared to those in South Africa. This variation could be a result of market dynamics, digital adoption levels, or differing business environments. Future studies could explore contextual factors that may cause this discrepancy and mediate this relationship.

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Agricultural efficiency vs. eco-efficiency in the EU-27: Changes and trends from 2015 to 2022

JEL Classification: *C14; D24; O13; Q01; R15*
Keywords: *agricultural efficiency; agricultural eco-efficiency; DEA; sustainability*

ABSTRACT

Research background: The agricultural sector plays a crucial role in ensuring food security and increasing economic growth. Due to natural resource constraints, agricultural policies need to focus on improving efficiency. However, agriculture contributes significantly to environmental degradation, making sustainable practices that balance efficiency and eco-efficiency essential but challenging for policymakers, scientists and farmers.

Purpose of the article: The main objective of this paper is to evaluate agricultural efficiency and agricultural eco-efficiency and their trends between 2015 and 2022 in the EU-27 member states. Part of the main objective is to verify the research hypothesis that "All agriculturally eco-efficient countries are not necessarily agriculturally efficient".

Methods: The agricultural efficiency and eco-efficiency of the EU-27 countries are calculated using an input-oriented Data envelopment analysis (DEA) model, assuming constant returns to scale (CRS). The assessment of eco-efficiency also considers undesirable output.

Findings & value added: The assessment of agricultural efficiency and eco-efficiency in EU member states for 2015 and 2022 shows notable trends and differences between countries. In 2015, 13 EU countries are agriculturally efficient, and this number increases to 16 by 2022. As regards the eco-efficiency of agriculture, 19 countries have an eco-efficient agricultural sector in 2015, rising to 21 by 2022. Bulgaria, Denmark, Germany, Ireland, Spain, Italy, Cyprus, Malta, the Netherlands, Romania, and Slovakia are countries with sustainable efficient and eco-efficient agricultural sector. The research hypothesis that "All agriculturally eco-efficient countries are not necessarily agriculturally efficient" is confirmed.

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Understanding the drivers and challenges of digitalisation in public administration: Insights from action research in phytosanitary inspection

JEL Classification: *H8; L3; O3*

Keywords: *digitalisation; public administration; digital transformation barriers; benefits of digitalisation; organizational learning*

ABSTRACT

Research background: Adaptive capabilities are becoming a crucial strategic issue not only for enterprises but also for state administration bodies. The rapid response to changes occurring in the environment determines the assessment of their operational efficiency. The process of building a new organizational strategy for the Phytosanitary Inspection was at the foundation of the conducted research, with the main objective being to increase the capacity to absorb new technologies that would support control processes.

Purpose of the article: This paper examines the factors influencing digitalisation processes in public organisations, focusing on both the enablers and obstacles shaping these transformations.

Methods: The study employs an action research approach, drawing on semi-structured interviews conducted within the phytosanitary inspection sector. The research incorporates perspectives from employees across different organisational levels and external stakeholders (51 semi-structured interviews), enhancing the validity of the findings

Findings & value added: A comprehensive analysis was conducted on the perspectives of both employees and clients regarding digitalization in public administration. The study offers valuable insights into the actual implications of digital transformation, including its impact on daily operations and interactions with stakeholders. It highlights strong expectations from employees regarding cost savings and facilitation of work, primarily through the reduction of bureaucratic processes. The study also emphasizes the potential of digitalization to enhance operational efficiency. However, it also identifies various internal and external challenges that significantly hinder the digital transformation process. Furthermore, the study sheds light on systemic fragmentation as a key barrier to digitalization, underscoring the need for integrated and strategic approaches to innovation in the public sector. Digitalization in public administration should begin with workforce education (upskilling) to improve the ability to utilize information technology. Effective digitalization can also be supported by a clear identification of knowledge sources and collaboration with stakeholders.

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Top innovation EU member states based on European patenting: AI got it wrong!

JEL Classification: *E61; H50; K3; L10; O11; O31; O32*
Keywords: *AI; European patent; GERD Index; innovations*

ABSTRACT

Research background: The global highly competitive society depends upon innovations. The investment in research and development (R&D) should support endeavors leading to inventions to be protected by patents and to become innovations. The EU is aware about it and wants 3% of GDP to go into R&D (GERD Index) in order to reach competitiveness based on innovations protected by European patents (EPs).

Purpose of the article: Politicians, academia as well as Artificial Intelligence (AI) believe that the GERD Index and the absolute and relative number of EPs are the key critetria to select top innovation EU member states. However, a deeper understanding of inventing-patenting dynamics reveals that the innovation leadership based on EPs should consider other factors and their trends, in particular application and granting concentration, cost and success rate.

Methods: The Eurostat, World Bank, and WIPO data is double checked and conventional criteria to select top innovation EU member states based on EPs and endorsed by AI (GERD Index, European patents in total and per capita) are employed along with newly proposed criteria reflecting longitudinal trends in applications and granted EPs withing the three-year cycle, their cost and success rate.

Findings & value added: Conventional criteria leads AI to point to Germany and Sweden, but the proposed criteria shows that the innovation leadership based on EP is much more complex and that the GERD Index, concentration, cost and success trends point to Sweden and Denmark, Finland, the Netherlands, while Austria, Belgium, Germany and Italy follow some ways back. The consistency and lean efficiency might be even more important than the country size, GDP and GERD.

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Organizational trust and employee satisfaction

JEL Classification: *C67; M12; M14*
Keywords: *trust; satisfaction; organization; supervisor; employee*

ABSTRACT

Research background: organizational trust and employee satisfaction are fundamental aspects of the functioning of any organization. Understanding the complex relationship between these two variables becomes therefore extremely important for human resource management and for the development of organizational strategies.

Purpose of the article: the aim of the research is to identify the level of organizational trust and employee satisfaction in contemporary organizations and to determine the relationship between them.

Methods: the study was conducted through an electronic survey among adults and economically active individuals. Descriptive statistics, Spearman correlation and a linear regression model were used to present the results. The research tool was an online survey questionnaire. The research sample consisted of 115 Polish employees from various sectors of the economy.

Findings & value added: respondents show a moderate level of satisfaction with their job. Organizational trust is also at a moderate level. Employees derive the greatest satisfaction from being able to work in accordance with their interests and passions. In terms of building trust with the supervisor, it is important that the manager is able to clearly communicate his or her expectations and be honest with employees. In terms of the organization's rules and standards, the respondents most appreciated the friendly atmosphere at work.

The thesis of the interdependence of organizational trust and employee satisfaction was confirmed. Employee satisfaction is clearly dependent on trust in the organization and trust in the supervisor. It can additionally be seen that employees value more the organization's norms, standards and rules than personal relationship with their supervisor.

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Possibilities for managing knowledge in security management at the Police Academy of the Czech Republic in Prague

JEL Classification: *M10; M12; I2*
Keywords: *security management; knowledge mangement; education; employee; Czech Republic*

ABSTRACT

Research background: Effective knowledge management and transfer is a key factor for ensuring security and crisis management in a dynamically changing environment. This contribution focuses on the possibilities of knowledge management and transfer in the field of security management, emphasizing the specific needs of the Police Academy of the Czech Republic in Prague.

Purpose of the article: The article analyses how security force managers transfer knowledge to their subordinates and what tools and modern approaches they use to do so (e.g. digital platforms, expert systems, simulation technologies, mentoring, coaching, etc.) and compare knowledge transfer practices with managers in education system. The main goal of article is to identify proven methods and tools for sharing and preserving knowledge within the framework of academic and practical training of security forces. These data are then compared with the experiences of managers in the Czech education system, who also face challenges associated with the effective transfer of knowledge and skills.

Methods: The analysis is founded on data from the authors' online questionnaire survey conducted from in years 2023 and 2025. Responses from 300 respondents are analyzed. Statistical non-parametric methods for the analysis of nominal data are used to verify defined hypotheses. The research combines quantitative questionnaire surveys and qualitative interviews with selected representatives of both groups.

Findings & value added: The study's conclusions provide comparison of approaches recommendations of both groups which allows identifying key similarities and differences in approaches to knowledge management and transfer. for optimizing knowledge management in the security sector, inspired by proven methods in education.

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The role of local government units in financing the protection and care of monuments

JEL Classification: H72; H76; Z18; O21

Keywords: local government tasks; monument protection; care of monuments; own tasks of municipalities; own tasks of provinces

ABSTRACT

Research background: As a result of legal modifications, changes have occurred in the management of cultural heritage in Poland. The tasks related to the protection and care of monuments have been decentralized. Currently, they are financed not only by the government sector but also by the local government sector, including municipalities, counties, and voivodeships. These entities have various financing options for this task: through current or investment funds, as well as through own expenditures or grants allocated to entities outside the public finance sector.

Purpose of the article: Determining the methods of financing by local government units for tasks related to the protection and care of monuments.

Methods: The study covers a period of 10 years (2014–2023) and includes all levels of local government units, and in the case of municipalities and counties, also their types. Descriptive statistics, correlation analysis, and chi-square tests were used to explore the relationship between locl government unit types and spending patterns. ANOVA was applied to detect significant differences in average annual expenditures.

Findings & value added: During the study period, both nominal and real expenditures increased. Counties account for approximately 50% of all expenditures. Current expenditures dominate, especially in land counties (90%). Most funds are allocated as specific grants to entities in the non-public sector. Cities with county rights show the highest share of investment expenditures (25%). Voivodeships primarily support other entities within the public finance sector through specific current grants. Few units allocate funds for investment expenditures, with cities with county rights and municipal communes being the main contributors, and the individual amounts being significant. So far, no research has been conducted on which method of financing the protection and care of monuments by local government units is the most common in Poland.

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Social capital as a driver of e-commerce development: Evidence from European panel data analysis

JEL Classification: *L81; Z13; C23*
Keywords: *social capital; e-commerce; trust; consumer behaviour; panel data analysis*

ABSTRACT

Research background: E-commerce is a key driver of global economic growth, influenced by technological, economic, and social factors. While prior research has focused on economic and technological determinants, the macroeconomic role of social capital—defined by trust, norms, and networks—remains underexplored. Social capital reduces transaction uncertainty, strengthens consumer trust, and facilitates business expansion, yet its cross-national impact on e-commerce adoption requires further investigation.

Purpose of the article: This study examines how social capital influences e-commerce development in European countries, exploring whether higher levels of social capital contribute to greater e-commerce adoption and transaction intensity while accounting for economic factors such as GDP per capita and disposable income.

Methods: The study analyses panel data from 28 European countries (2015–2023) using the Social Capital Index (SCI) to measure national trust and networks. E-commerce activity is assessed based on online purchase participation and business turnover from digital sales. Panel data models with fixed and random effects are applied to examine the relationship between social capital and e-commerce adoption.

Findings & value added: The results confirm that social capital significantly influences e-commerce adoption. Countries with stronger trust networks and social cohesion see higher participation in digital commerce. Economic conditions, including GDP per capita and disposable income, moderate this effect, with wealthier nations benefiting more from trust-driven e-commerce expansion. The study underscores the importance of fostering social capital to enhance consumer confidence, lower transaction costs, and promote sustainable digital market growth, offering policy recommendations to strengthen trust mechanisms and support e-commerce ecosystems.

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Behavioural aspects of energy and water efficiency in post-industrial regions: What makes GZM metropolis different?

JEL Classification: *Q56; Q58; R11; R20; R58; D91*

Keywords: *sustainable energy transition; water consumption behaviour; post-industrial urban regions; socio-economic sustainability; behavioural economics*

ABSTRACT

Research background: Sustainable transition in post-industrial regions requires not only technological and infrastructural upgrades but also a deep understanding of human behaviour. Regions like the Górnośląsko-Zagłębiowska Metropolis (GZM), historically shaped by coal-based industry, now face complex challenges in transforming both energy and water systems. Yet, behavioural inertia and socio-economic disparities may undermine the effectiveness of sustainability policies.

Purpose of the article: This study investigates behavioural drivers and barriers to household-level sustainable practices in energy and water use. It aims to identify how factors such as financial motivation, environmental awareness, and social norms shape behaviours and how the GZM Metropolis compares to other Polish regions in this context.

Methods: The analysis is based on a representative nationwide survey conducted in October 2024 (N = 1067, CAWI). Using exploratory factor analysis and structural equation modeling (SEM), we assess how latent variables influence self-reported behaviours, including energy-saving practices, investments in renewable energy sources, and water-use efficiency.

Findings & value added: Financial incentives are key enablers of sustainable behaviour, but their impact depends on perceived efficacy and trust in institutions. GZM residents demonstrate higher engagement in energy and water-saving behaviours compared to other regions, likely due to greater environmental awareness and stronger social diffusion effects. However, significant gaps remain between pro-environmental intentions and actual practices, especially in older or lower-income groups. This study adds value by integrating behavioural insights into regional sustainability research. It highlights the need for locally tailored strategies that combine behavioural, financial, and regulatory instruments to support energy and water transition in post-industrial urban areas. By linking micro-level behavioural data with regional comparisons, this paper contributes to a more comprehensive understanding of Poland’s sustainability transition and offers practical recommendations for public policy in Central and Eastern Europe.

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Green jobs and green skills: Case of Lithuania labour market

JEL Classification: *J23; J24; J88*
Keywords: *green skills; green jobs; labour market; case analysis; content analysis*

ABSTRACT

Research background: By 2030, 2.5 million new jobs will be created, with at least 60% of all adults needing training each year. The International Labour Organization emphasizes the importance of general skills, which include not only environmental awareness and knowledge of new sustainable technologies, but also the integration of sustainability into areas such as occupational safety, entrepreneurship, resilience, teamwork, a willingness to learn, and cooperation. As a result of the green transition, new professions are emerging, while traditional professions are being transformed. Apart from shifting employment towards sectors that drive greening and green jobs, the shift towards sustainable production and consumption will have impacts that affect all occupations and sectors and bring about changes in skill needs. Alongside technical skills linked to the green transition, transversal skills must also be reflected in education and training provisions at all qualification levels.

Purpose of the article: to analyze the current situation on green jobs and green skills in Lithuania's labour market.

Methods: literature analysis, case analysis, career websites' content analysis.

Findings & value added: The Lithuanian labour market shows a growing demand for green skills but faces challenges in meeting this demand. Several factors contributing to the challenges in developing green skills were identified: absence of a clear classification; assessment difficulties; data scarcity; fragmented education system; and specialist shortage. Various initiatives to address these challenges are proposed, such as educational reforms, green finance promotion, strategic planning, creation of an adult learning platform, proposement of an industry digitalization roadmap. Results of Lithuania's career websites analysis revealed the main green job positions currently proposed include sustainability managers, project managers, engineering technologists, environmental engineers, and sustainability specialists. These positions require a range of skills, including knowledge of sustainability standards, analytical skills, project management skills, and relevant technical expertise.

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Process maturity of science and technology parks in the context of their life-cycle stage: Evidence from Poland

JEL Classification: *M10; O30; L84*
Keywords: *science and technology parks; life-cycle stage; process maturity*

ABSTRACT

Research background: Science and technology parks (STPs) are entities among which an evolution of operating models can be observed, which is a consequence of the changeability of the environment and the natural development of the park itself. However, regardless of the adopted management model, each park is going through specific stages of development (life cycle phases). In order for park management to achieve the expected results, a wide portfolio of contemporary concepts can be used, including — process management. The degree of its use indicates a certain process maturity. Achieving higher levels of process maturity, on the other hand, can lead to organisational development. In the literature on the subject, publications describing studies on the use of process management in STPs appear sporadically.

Purpose of the article: Due to the identified research gap, the aim of the article is to diagnose the process maturity of science and technology parks in Poland in the context of the parks' life-cycle stage.

Methods: The main study using the author's questionnaire was conducted among 28 STPs in Poland (82.35% of the total number) in 2024. Sixteen questions referring to different stages of process maturity of organisations were used to assess the level of process maturity (1–5) of the studied entities. In order to classify them on particular levels of process maturity, an available tool was used, i.e. the process maturity model developed as part of the Institutional Development Project (IDP model) in 2015. The development stages of parks (1–3) were determined by assessing the degree of implementation of the 20 activities identified from the literature in this area. In order to assess the relationship between the level of process maturity of parks and the characteristics describing parks, the Kruskal–Wallis Test was performed for independent samples.

Findings & value added: Parks in the 1st phase of development are very diversified in terms of process maturity level — most often located at levels 1 and 4. In the 2nd phase of development a greater concentration of parks at level 2 of process maturity is noticeable. Parks in the development phase 3 show greater variation in process maturity levels but are most often found at stages 2 and 4. The presence of parks at level 5, although not numerous, indicates that some of them have reached full organisational process maturity. As parks progress through the development phases, changes in their process maturity levels are noticeable. Most of the process maturity characteristics do not show statistically significant differences between parks' development phases. Significant differences were found in the case of two characteristics: assignment of responsibility for key processes in the form of so-called process owners and regular training of employees in the field of management and process improvement. This may indicate an increase in the importance of formalisation and improvement of process management in more advanced phases of park operations. The findings highlight the importance of a strategic approach to the development of science and technology parks, with an emphasis on professionalising process management and strengthening collaboration and innovation. The results can form the basis for further research and practical recommendations for park managers.

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The impact of rising energy prices on the profitability and competitiveness of Czech engineering

JEL Classification: *A11*
Keywords: *energy costs; engineering; competitiveness; correlation analysis*

ABSTRACT

Research background: Rising energy costs have significantly affected industries in recent years. One of these industries is engineering, where energy consumption is a critical cost component. This has an intermediary effect on the profitability and competitiveness of engineering companies.

Purpose of the article: The primary objective of this study is to analyse the relationship between the evolution of energy prices and the financial variables of engineering enterprises in the Czech Republic. The research aims to determine whether energy price fluctuations negatively affect the profitability and competitiveness of firms in the engineering sector.

Methods: The study uses correlation analysis to quantify the relationship between the evolution of energy prices in the Czech Republic and selected financial variables of engineering firms falling specifically in the CZ NACE-28 category for the period 2019–2023. The percentage evolution of energy prices and financial variables is subjected to statistical analysis to identify trends and dependencies.

Findings & value added: The correlation analysis confirms a strong positive relationship between energy price growth and production costs. In contrast, the analysis indicates a strong negative correlation between energy prices and gross margin or EBITDA. These findings suggest that energy price volatility poses a certain financial risk for engineering companies. The study also provides valuable insights for firms seeking to optimize energy efficiency and invest in alternative energy sources to alleviate cost pressures. The results contribute to the debate on sustainable industrial strategies and financial resilience to rising energy costs.

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Employment protection legislation and macroeconomic outcomes: Channels of influence

JEL Classification: *J08; J21; J24; J38*
Keywords: *EPL; labour market dynamics; economic efficiency; social welfare*

ABSTRACT

Research background: Employment protection legislation (EPL) plays a crucial role in shaping macroeconomic performance, yet its impact is subject to significant debate. Although traditionally analysed through its effects on labour demand, recent economic transformations require a broader perspective and highlight the need to reassess how EPL interacts with key macroeconomic variables, anabling both developed and emerging economies to face opportunities and threats in an increasingly interconnected world.

Purpose of the article: This paper aims to systematically examine the transmission channels through which EPL influences macroeconomic outcomes. The hypothesised hierarchy of channels includes: (1) labour demand; (2) productivity and efficiency of resource allocation; (3) labour supply and economic activity; and (4) well-being and social welfare. Research assesses how these channels ultimately shape employment levels, unemployment rates, wage structures, profits, GDP, TFP, and social inequalities.

Methods: The study employs a mixed method approach, based primarily on extensive literature analysis. Additionally, it integrates empirical assessment using time series data on EPL and macroeconomic indicators. Statistical techniques are applied to quantify the relationships between EPL and economic performance and to assess variations in EPL effectiveness in different institutional settings.

Findings & value added: Previous research often assumes that the primary impact of EPL operates through labour demand; this study highlights the role of productivity, labour supply, and economic efficiency. It suggest that EPL affects macroeconomic performance not only by influencing hiring and firing decisions, but also by shaping worker incentives, innovation, and resource allocation. These channels may be equally, if not more, important in determining economic competitiveness and social welfare. The study contributes to the literature by offering a comprehensive framework that re-evaluates the role of EPL beyond its direct effect on labour demand, providing valuable insights for policymakers.

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Enhancing ethical behavior through the promotion of employees' moral development

JEL Classification: *M14*

Keywords: *moral development; ethical behaviour; business ethics; Kohlberg's theory of moral development*

ABSTRACT

Research background: In today's business environment, insufficient attention to business ethics by organizations weakens public trust in the capital market and undermines trust in institutions and forces society to demand that organizations operate according to high ethical and moral standards. In response, organizations are trying to improve their ethical image and business ethics are increasingly being integrated into organizations over time, but the main challenge is that although it can be learned and practiced, in reality it is not always properly disseminated, which leads to a lack of ethics at the practical, rather than formal, level. So, for the economy and business to flourish, it needs moral employees who would behave in ethical manner within the organization. Therefore, the problem of this research is how to promote the moral development of employees of organizations, aiming at their ethical behavior at work.

Purpose of the article: to assess the level of moral development of employees in case of Lithuanian organisations in order to provide suggestions for promotion of their moral development.

Methods: theoretical literature analysis was employed for literature review; quantitative research — survey questionnaire method of was used to conduct the empirical research (the data was processed using SPSS).

Findings & value added: The participants of the research are mostly characterized by Kohlberg's VI level of moral development. Based on the results of correlation analysis and Chi-squared tests of the dependence, it can be concluded that not in all cases of moral levels there is a connection between manifestations of higher morality and emplyees education and age. This allowed to more accurately suggest measures to enhance ethical behaviour in specific groups of employees according to the issues discovered, according to their belonging to different levels of moral development.

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Usefulness of the Business Process Management application in the activities of musician artists

JEL Classification: *D24; L82; M14; Z11*

Keywords: *business education for musician artists; process approach in musician artists environment; electronic communities of musicians; business procedures for musician artists*

ABSTRACT

Research background: The article addresses the issue of support for artists or, more broadly, professionals in the creative sector on the labor market. Based on the analysis of curricula in art schools, an attempt was made to assess the knowledge of graduates in the fields of management and entrepreneurship. The background for supporting musicians was framed within the context of contemporary environmental indicators: the process approach, management of social projects, community building, and the role of Information and Communication Technologies.

Purpose of the article: The aim of the research was to familiarize musicians with the mentioned topics and to explore their interest in applying them. The article's goal is to present musicians' knowledge and attitudes toward the contemporary labor market in the field of art and, subsequently, to propose professional activity processes based on the process approach.

Methods: An analysis was made of the process approach in multi-organizational environments and within the context of freelance professions, mainly artists, as well as the issue of creating professional communities with the use of ICT technologies. To explore the environment, the phenomenological method was selected. This involved conducting interviews and panel discussions with people professionally engaged in the music business, specifically in the classical music genre. Respondents had to meet the following criteria: be educated musicians (at least a secondary music school graduate) and perform paid work as a composer, conductor, or performer, which is a primary or significant source of income.

Findings & value added: The research revealed that musicians lack sufficient knowledge of the process approach, although their understanding is somewhat better regarding electronic communities. However, they must learn to apply these concepts in their professional activities. Given the diversity of music professions, based on the common panel discussions, proposals were developed for applying the examined topics in the discussed environment.

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Exploring talent management: The role of process in organizational success

JEL Classification: *M12; M51; M54*

Keywords: *talent management; process evaluation; organizational success; employee engagement; employee development*

ABSTRACT

Research background: Talent management is a critical driver of organizational success, yet its effectiveness depends on the strength of its underlying processes. Each phase of the talent management process, namely strategy, identification, assessment, development and talent retention plays a distinct role in shaping organizational outcomes. However, the strengths and weaknesses of these phases are often overlooked, leading to inefficiencies and missed opportunities for improvement.

Purpose of the article: This paper evaluates the strengths and weaknesses of each phase of the talent management process. By assessing these phases individually, the research aims to identify areas for improvement and provide actionable insights to enhance the overall effectiveness of talent management process.

Methods: A questionnaire survey was conducted to assess the different phases of the talent management process. Each question in the questionnaire utilized a Likert scale, allowing respondents to express their level of agreement or satisfaction. The evaluation of the survey responses was based on the calculation of average values, providing a clear representation of the strengths and weaknesses within each phase.

Findings & value added: The findings highlight distinct variations in the effectiveness of different phases within the talent management process. Some phases demonstrate strong alignment with organizational goals and employee needs, while others reveal challenges in implementation and effectiveness. By systematically assessing these phases, organizations gain actionable insights to improve their talent management process. This research adds value by providing a detailed evaluation of each phase, offering organizations a roadmap to refine their talent management processes and achieve greater organizational success.

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The power of eco-labelling in green beauty: Shaping attitudes and driving purchase intentions

JEL Classification: *M31*
Keywords: *eco-labelling; green beauty products; attitude; purchase intention*

ABSTRACT

Research background: The growing consumer shift toward sustainability has led to increased demand for eco-friendly personal care products, particularly within the green beauty sector. However, consumers' attitudes and purchase behaviours are influenced by various factors, including the credibility of environmental claims. While eco-labelling, green packaging, and environmental concern are generally associated with favourable consumer perceptions, scepticism toward green marketing remains a potential barrier.

Purpose of the article: This study aims to examine the influence of eco-labelling, green packaging, environmental concern, and green beauty product scepticism on consumer attitudes toward green beauty products. Furthermore, the research investigates the impact of these attitudes on purchase intention. By analyzing both enabling and hindering factors, the study seeks to contribute to the understanding of sustainable consumer behaviour in the beauty industry.

Methods: Data were collected from 500 respondents in South Africa using an accredited data collection company. The data were collected using a structured questionnaire with a 6-point Likert-type scale. Structural equation modelling (SEM) was employed to test the hypothesized relationships among the variables, including the direct effects of the four independent variables on green product attitude and the subsequent effect of green product attitude on purchase intention.

Findings & value added: The findings reveal that eco-labelling, green packaging and environmental concern significantly and positively influence consumer attitudes toward green beauty products. In contrast, green beauty product scepticism has a significant but negative impact on attitude formation. Additionally, a strong positive relationship was found between consumer attitude and purchase intention. The study adds value by highlighting the dual role of informational cues and psychological barriers in shaping sustainable consumer choices. It offers practical implications for marketers to strengthen eco-labelling credibility and minimize scepticism through transparent communication strategies with the context of South Africa.

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Identifying factors affecting regional economic development in Poland: A multi-group analysis (2004-2023)

JEL Classification: *R11; O18; O30*
Keywords: *regional development; economic growth; multi-group analysis*

ABSTRACT

Research background: Twenty years of Poland's EU membership presents an opportunity to evaluate regional development processes. Despite substantial cohesion policy funding, regional disparities persist. While previous studies focused mainly on convergence/divergence analysis, mechanisms differentiating the impact of development factors across regions with varying wealth levels remain insufficiently understood.

Purpose of the article: This study aims to identify key factors influencing regional economic development and examine whether their effects differ depending on development levels. The research investigates how development mechanisms vary across Polish regions at different stages of economic advancement.

Methods: The study employs PLS-SEM with Multi-Group Analysis (MGA) on panel data covering 16 Polish voivodeships from 2004–2023. Regions are divided into four groups based on GDP per capita (LOWEST, LOW, HIGH, HIGHEST). The model includes seven exogenous constructs (human capital, innovation, transport infrastructure, labor market dynamics, tourism attractiveness, investments, and spatial structure) and one endogenous construct (economic development).

Findings & value added: Results reveal significant differences in development determinants across regional groups. In less developed regions (LOWEST), spatial structure (0.437) and investments (0.405) play crucial roles, while in the most developed ones (HIGHEST), investments (0.642) and labor market dynamics (0.453) dominate. A paradoxically negative impact of innovation in highly developed regions (–0.107) was observed. MGA tests confirmed statistically significant differences between groups for investments ($p=0.033$) and spatial structure ($p=0.000$), supporting the hypothesis of differentiated development mechanisms. This study contributes by identifying varied regional development patterns, enabling tailored cohesion policy recommendations based on specific regional development needs.

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Greening of electronic commerce towards sustainable development

JEL Classification: *L81; Q56*
Keywords: *e-commerce; green e-commerce; eco e-sellers; eco e-customers*

ABSTRACT

Research background: E-commerce has become widespread in contemporary economies and has reached a saturation phase. After years of dynamic growth, the need for qualitative change is being recognized. As in many economies, greening is entering e-commerce as an expression of the desire for sustainability.

Purpose of the article: The aim of the study has been to diagnose the attitudes towards green e-commerce of young people, who often self-identify or are perceived to be green. The attributes of eco e-commerce were identified for the study. The research problem, was formulated in the form of a question as to whether ecological e-commerce has become widespread on both the demand and supply sides.

Methods: In this paper, a qualitative study has been used, and a consumer survey was conducted that explored what the greening of e-commerce looks like.

Findings & value added: The results of the studyproved that among both sellers and young online shoppers, ecological practices are very much present and, most importantly, are not marginal. Young consumers identify with the slow life or less mess lifestyles and show a lot of pro-environmental behavior both in everyday life and in online shopping; but the pro-environmental aspect is not the main motive for online shopping. The article can be used for application purposes, since it points out what e-sellers can improve as far as the greening of e-commerce is concerned. E-sellers could more widely introduce solutions such as: reserving products in-store for fitting, collecting used products in exchange for discounts, offering a reduced price for non-returnable purchases or bicycle couriers. Customers, however, are not interested in introducing charges for eco-friendly packaging. In summary, it can be concluded that the greening of e-commerce is not a temporary trend, but a well-advanced process.

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The impact of contemporary financial technologies on the management of personal finance

JEL Classification: *G51; G53; G10; G20*

Keywords: *personal finance management; financial technologies; financial knowledge; finance; financial management habits.*

ABSTRACT

Research background: In the modern world, one of the most important things is financial stability and the ability to ensure it for a long time. Personal finance management and related processes are receiving more and more attention in the world, because their proper management is the basis for a high-quality and stable life. Every person understands the process of personal finance management differently and is looking for various tools to achieve set financial goals or realistically assess financial situation. Budget planning, achieving financial goals, saving and investing are becoming everyday life processes, but certainly not everyone realizes what tools or technologies could be used to achieve better financial performance. Therefore, the knowledge about the latest financial technologies and the possibilities to use them are becoming especially important and relevant in everyone's life, also, helps to save time and allows people to successfully achieve set financial goals.

Purpose of the article: To analyze the most commonly used financial technologies by households and determine their impact on the personal finance management process.

Methods: scientific literature analysis; statistical data analysis; survey; correlation-regression analysis.

Findings & value added: The most popular and most used financial technology programs by households were identified and analyzed, also their influence on the personal finance management process was determined. The results obtained showed that using financial programs changes a lot of people financial management habits.

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Online brand hate: Characteristics, causes, and consequences

JEL Classification: *D91; M31; L86; O33*
Keywords: *consumer behavior; brand hate; consumer generations.*

ABSTRACT

Research background: Online brand hate is a growing phenomenon impacting companies across diverse sectors. While earlier studies mainly concentrated on positive emotions such as hope, joy, pride, or love (Batra et al., 2012), more recent work has highlighted negative feelings such as anxiety, disgust, shame, or hatred, and their influence on consumer behavior (Kucuk, 2020; Taqi et al., 2019; Zarantonello et al., 2016; C. Zhang & Laroche, 2020). Recent literature links it to both internal (personality traits, frustrations) and external (brand image, service failure) factors, creating a complex field for exploration.

Purpose of the article: The aim of this study is to explore the nature of online brand hate and explore its underlying causes and far-reaching consequences. Additionally, it examines the behavioral profile of consumer who are more prone to hate with a focus on providing actionable strategies for mitigating brand hate through technological, legal, and educational means.

Methods: The research followed a two-phase approach: an extensive literature review conducted from January to December 2024, and qualitative research through eight focus groups between September 2024 and January 2025. Participants, grouped by generational cohorts (Z, Y, X, and Baby Boomers), were analyzed using thematic coding to identify patterns in online brand hate behavior

Findings & value added: Findings reveal that brand hate takes various forms, including emotional venting, strategic attacks (e.g., paid hate), exclusionary behavior, and attempts to extort benefits. It is often driven by personal frustrations rather than actual brand failures. Different generations perceive and engage in hate differently, but frustration, loneliness, and a desire for recognition are common threads. The results offer valuable insights for policymakers, consumer protection agencies, and marketers. They also highlight the need for targeted educational campaigns.

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Foreign direct investment in the European Union: A cluster analysis approach

JEL Classification: *O11; E00; C10*
Keywords: *foreign direct investment (FDI); European Union; cluster analysis*

ABSTRACT

Research background: Foreign Direct Investment (FDI) plays a crucial role in global economic integration, often seen as a driver of many economic benefits such as growth, technology transfer, job creation and better harnessing of the local economies' potential.

Purpose of the article: This study aims at contributing to enrich the specific literature regarding FDI in the European Union (EU) employing a cluster analysis. Over the last ten years, FDI stocks increased significantly in Europe. Most of the studies emphasizes a positive link between FDI and economic growth. According to the economic literature, the potential drivers of FDI are related to market size, openness to trade, inflation, labor costs, technology, political risk. In this perspective, it is important to compare countries at the EU level. A proper way to discover patterns into multidimensional data is represented by clustering.

Methods: The technique of classifying countries into subgroups based on variables that are linked to FDI known in the specific literature as "pattern recognition" represents a form of "unsupervised machine learning". This study reveals the clusters grouping of EU countries based on the performances of the economies between 2013–2023 in terms of FDI and the main drivers.

Findings & value added: The segmentation of the countries in the EU by identifying similar patterns of FDI represents a key aspect that broaden the outlook on the economic activity in the EU. The variables chosen in the analysis prepared for this article are mainly macroeconomically, focusing on FDI and main drivers. Through the exploratory data analysis that was performed on the data as a preliminary evaluation, we observed the position of Romania compared to the other countries of the European Union and also the characteristics of the economical situation of the FDI intensity in the European states. The hierarchical visualization offers a better understanding of the economical classification of the EU countries in terms of FDI.

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The innovation of enterprises and cooperation between science and business in the didactic aspect

JEL Classification: *O31; O33; O38; L14; C35*

Keywords: *product innovations; process innovations; didactic-practical aspects of cooperation between science and business; logit modeling*

ABSTRACT

Research background: The most frequently described variables influencing on innovation of enterprises include, among others, the size, revenue dynamics and technological class of the enterprise. There are also publications describing the impact of relations and distance from other participants in supply chains on innovative activity. However, there are no publications describing the impact of cooperation between scientific and business units in the didactic and practical aspect on innovative activity.

Purpose of the article: The aim of this article is to diagnose whether cooperation between science and business in the didactic and practical aspect stimulates on the innovative activity of industrial enterprises. Additionally, this study will enable a comparison of the strength of this influence in comparison to the influence of other variables adopted in the control study.

Methods: The collected data were processed using logit modeling, which allowed determining how the selected independent variables describe the direction and strength of the impact on the dependent variables adopted for the study.

Findings & value added: Based on the research conducted, it can be observed that the implementation of new products into production is positively influenced by, among others: professional internships in the company for students and academic staff, and the company's use of meetings and presentations as a knowledge transfer mechanism. In turn, the factors hindering the implementation of the new product into production were primarily the low assessment of the competences of academic staff given by entrepreneurs and the chosen knowledge transfer mechanisms. In the case of implementing new processes, the factors stimulating such activities included study visits by students and lecturers to enterprises and knowledge transfer mechanisms. The conclusion that cooperation in the didactic and practical aspect between the spheres of science and business stimulates product and process innovation should be considered an added value. The impact of this form of cooperation is comparable to the impact of some knowledge transfer mechanisms and forms of enterprise ownership that are beneficial for innovative activity.

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The use of statistical techniques for selection of ratios for assessing the financial condition of companies

JEL Classification: *C38; C52; G30*
Keywords: *confirmatory factor analysis; principal components analysis; financial situation assessment; Visegrad Group*

ABSTRACT

Research background: According to Coface data, there are almost 3.8 million registered companies in the Visegrad Group (V4). However, the number of company bankruptcies has been increasing significantly in recent years. Compared to 2020, in 2023 the largest increase in the number of bankruptcies can be observed in Hungary (405%) and Poland (352%), and much smaller in Slovakia (21%) and the Czech Republic (9.8%). Therefore, it is so important to correctly determine the financial condition of the company and its business partners.

Purpose of the article: The main aim of the work is to assess the usefulness of statistical methods and to indicate the stable key factors determining the financial condition of enterprises from the Visegrad Group. The research used an original database consisting of 100,000 companies from the V4 countries from six main sectors during 2018–2021. For all these companies, 69 financial and nonfinancial ratios were calculated.

Methods: The work uses factor analysis (FA) to identify key factors determining the financial condition of companies and principal component analysis (PCA) to confirm the correctness of reducing the number of financial indicators describing the financial condition of companies.

Findings & value added: The research provides a solid selection of ratios using two methods. First, checking the usefulness of the extracted factors allows the use of FA/PCA to trace the process of change indicated by the analysis of factors when the phenomenon of increasing economic risk is observed in the enterprise's environment, e.i. the state of the epidemic (using ratios from the years before the COVID-19 pandemic: 2018–2019 and during the pandemic: 2020–2021). Second, checking whether the selected ratios change in the individual analysed sectors: manufacturing, construction, retail trade, wholesale trade, transport and warehousing and the electricity production sector as well as countries (Czech Republic, Hungary, Poland and Slovakia).

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The influence of selected social and psychological factors on online shopping behavior

JEL Classification: *M30; M31; M37*
Keywords: *online shopping behavior; trust perception; risk perception; exprerince perception; social networks*

ABSTRACT

Research background: Factors affecting online shopping behavior represent a complex set of influences and conditions that affect consumers' purchasing decisions. Examining these factors is critical to creating effective marketing strategies, optimizing the purchasing process, and adapting to innovation and consumer needs.

Purpose of the article: The aim of this study is to evaluate selected psychological and social factors and their impact on consumer behavior during online shopping.

Methods: The main goal was fulfilled using an online questionnaire survey, which analyzed selected factors on a representative sample of the Czech internet population, i.e. the influence of trust and risk perception, the influence of experience with the Internet and the influence of exposure to social networks. The hypotheses were tested using Pearson's Chi-square test.

Findings & value added: A statistically significant effect of gender on the perception of the riskiness of online shopping was confirmed, with women more likely to perceive online shopping as riskier than men. The effect of trust, i.e. perceived riskiness, on the frequency of online shopping was not statistically significant. The results showed that respondents who shop more often perceive less risk. A statistically significant relationship between Internet experience and online shopping frequency was confirmed, with respondents who have been actively using the Internet for a longer period of time shopping more often. The effect of one's own perceived experience with the Internet on the frequency of online shopping was statistically significant. Respondents who consider themselves to be more experienced in using the Internet more often perceive a lower risk than those who are less experienced. A statistically significant dependence of the time spent on social networks on the frequency of online purchases was not confirmed, nor was a statistically significant influence of age, gender or education on trust in recommendations through social networks confirmed. The findings provide several guidelines for an effective online communication strategy for Internet retailers. The study can also serve as background material for a follow-up study of the influence of social and psychological factors on online shopping behavior.

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Determinants of adoption of BNPL payments by their users

JEL Classification: *D12; G53; O33*
Keywords: *BNPL; consumer finance; deferred payments; fintech; technology adoption*

ABSTRACT

Research background: BNPL (Buy Now, Pay Later) payments is a rapidly growing area of fintech that is changing the way consumers manage her finances and make purchases online. The arguments for undertaking research identifying the factors of adoption of this payment method are the innovation of the subject matter and the practical importance of the analysis results for BNPL payment providers and regulatory institutions. This research will provide a better understanding of consumer needs and behaviours, which can lead to more effective marketing strategies and regulatory action to protect consumers and promote responsible financial innovation. In addition, the limited number of studies on the determinants of BNPL adoption and the lack of studies relating to the decision to use deferred payments by CEE consumers also indicate the need for such research.

Purpose of the article: Identification and assessment of the adoption factors of BNPL payments by their users in Poland.

Methods: Critical analysis of the source literature, Technology Acceptance Model (TAM), Partial Least Square-Structural Equation Modelling (PLS-SEM). Empirical data is from a survey conducted in August 2024 using the CAWI method on a sample of 350 Poles.

Findings & value added: The study identified factors influencing the adoption of BNPL payments by their users. These included perceived usefulness (PU), risk (PR) and personal innovation (PI). Perceived ease of use (PEOU) and trust (PT) were shown not to be statistically significant constructs influencing adoption attitudes (ATT). The applied research model showed satisfactory explanatory power for intentions to use BNPL payments. The article fills a gap in the literature, as most of the research on BNPL to date has focused on the Anglo-Saxon and Asian markets, while the CEE context has not yet been explored. This is the first research study to present, based on the TAM model, the identification of factors of BNPL adoption by consumers from Poland, where digital payments market is the fastest growing in Central and Eastern Europe.

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Digital and financial natives and immigrants: A generational approach

JEL Classification: *D12; G21; O33; Z13*
Keywords: *generations; financial consumer behaviour; financial inclusion*

ABSTRACT

Research background: The article explores the financial behaviors of different generations in the context of digital financial habits, distinguishing between "digital financial natives" and "digital financial immigrants."

Purpose of the article: The aim is to analyze how technological advancements have influenced financial decision-making process across various generations.

Methods: The analysis is based on the descriptive analysis method and the results of an original study conducted among representatives of the Silent Generation (SG), Baby Boomers (BB), Generation X, Y, Z, and Alpha (quantitative and qualitative research).

Findings & value added: The study examines generational changes in the adoption of digital banking, mobile payments, and fintech solutions, considering factors such as trust in digital financial services, financial literacy, and adaptability to new technologies. By identifying key trends and challenges, the article provides insights into how financial institutions and policymakers can better address the needs of different generational groups in an increasingly digitalized financial environment, ensuring that digital inclusion does not become a burdensome obligation or a social necessity.

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The dynamics of municipal and city budgets' spending on educational tasks in light of a shift-share analysis

JEL Classification: *H49; H79*
Keywords: *local government; public tasks; shift-share; municipal budget expenditure; education and upbringing*

ABSTRACT

Research background: Under current law, public education is one of the mandatory responsibilities of municipalities and cities with county rights in Poland. Previous studies indicate significant variation in educational spending regarding total expenditures and their structure. These differences may stem from endogenous factors, such as local education policies and exogenous ones, including legislative changes or the level of financial support from the state budget. This analysis considers these aspects, focusing on the dynamics and structure of local government budgets over a longer time horizon.

Purpose of the article: The study aims to assess changes in the structure of educational spending (from 2008 to 2023) among municipalities and cities with similar wealth and education expenditures.

Methods: The analysis used secondary data from the Local Data Bank. The empirical material was subjected to calculations using a classical shift-share analysis and a Kruskal–Wallis non-parametric test. The former procedure made it possible to perform a detailed analysis of changes in expenditure from municipal budgets on educational tasks (in 2008–2023) in groups of communes distinguished with the k-means method. The latter method was used to determine the statistical significance of the observed differences.

Findings & value added: The analysis helped determine whether national trends, expenditure structure, or local decisions drove the increase in spending. The study shows that the key factor is the national shift (NS) effect, which was positive across all groups. Additionally, the local shift (RS) component was negative in the least affluent municipalities, indicating that despite an absolute increase in spending, these areas are falling behind the national benchmark. The findings highlight areas that require intervention to ensure a more balanced development of the education sector.

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Price and income elasticities of food demand in Poland: An QAIDS model approach

JEL Classification: *D12; Q11; C55; Q18*
Keywords: *food demand; household consumption; QUAIDS model; demand elasticity*

ABSTRACT

Research background: The recent surge in food prices across Europe, including a rise of over 20% in Poland in early 2023, has renewed interest in household food consumption. While several demand system studies have been conducted in Central and Eastern Europe, recent empirical evidence for Poland using microdata remains limited.

Purpose of the article: This study aims to estimate price and income elasticities of food demand in Poland using a demand system approach. It also seeks to explore differences in household responses across income groups, offering updated insights into consumption behavior.

Methods: The analysis uses microdata from the 2022 Household Budget Survey in Poland. Food products are grouped into six categories: bread and cereal products; meat and fish; dairy products; oils and fats; fruit and vegetables; and other food. The estimation is based on the Quadratic Almost Ideal Demand System, which allows for nonlinear Engel curves. Demographic controls are included, and the model is estimated using analytical weights. Elasticities are calculated for the full sample and by income quartile.

Findings & value added: The results show that food demand in Poland is price inelastic. Income elasticities are close to unity across categories and income groups, reflecting stable consumption patterns. Cross-price elasticities are mostly negative, indicating complementarity between food types, though substitution effects are observed between meat and dairy, and between dairy and fats. Variation in elasticities across income quartiles is minor, with the exception of "other food," which shows greater price sensitivity among higher-income households. Study contributes to the literature by providing updated empirical evidence for Poland and by applying the demand system, which improves the precision of elasticity estimates, especially for cross-price relationships.

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The labour market for young people: Selected issues

JEL Classification: *I25; J24; J64*
Keywords: *youth-friendly labour market; labour market attributes; students motivations*

ABSTRACT

Research background: The article addresses issues related to the activity of students on the labour market and is consistent with the current research trend concerning the search for a friendly labour market for young people.

Purpose of the article: The aim of this study is to identify key factors describing the labour market that are considered most significant by students and, based on this analysis, to create a profile of a youth-friendly labour market. The paper presents four research questions: What is important to students in a labour market? Which characteristics of a labour market are important for students and why? Which characteristics describes of economy are important for students in context labour market? Is there a difference in the choices of students regarding indicators describing labour market, which is determined by type of study?

Methods: The data for the analysis was collected from students of the Kracow University of Economics who participated in the study aimed at identifying the most important indicators characterizing, in their opinion, a youth-friendly labour market for those entering the workforce. Additionally, quantitative data was supplemented with direct interviews, which strengthened the argumentation behind students' choices. Basic statistical tests were used to analyze the data.

Findings & value added: The conducted analysis indicates that for students who can choose the labour market in which they would like to work, various characteristics of that market are important. These characteristics can be grouped into four categories: classical labour market indicators, security-related factors, financial aspects, and the socio-economic environment. The study does not allow for the identification of a model labour market that would be equally important to all respondents. The choices made by students do not follow a single, clearly defined pattern. Additionally, differences were observed between the preferences of full-time and part-time students.

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The impact of state ownership structures on the efficiency of professional football clubs

JEL Classification: *D20; G3; H76; L11; L83*

Keywords: *efficiency of sports clubs; management efficiency; ownership structure; state-owned enterprise; stochastic frontier analysis*

ABSTRACT

Research background: Poland has a specific ownership and management model of an enterprise running a professional football club, which is not found in Western European countries, where public sector enterprises, state companies, or local governments exercise ownership or non-ownership control.

Purpose of the article: The study aims to assess the positive or negative impact of the ownership of public sector enterprises running professional football clubs in Poland on financial and sporting efficiency.

Methods: A parametric approach of the Stochastic Frontier Analysis method was used to conduct the analysis, where a function describing the relationship between inputs and outputs is required. The properties of the Cobb–Douglas function were used here and implemented based on the Battese and Coelli model.

Findings & value added: The analysis shows a positive effect on financial efficiency was observed in the ownership of enterprises controlled by state-owned companies and private individuals and a negative effect in the case of enterprises controlled by local governments. The negative impact of local government ownership can be explained by negative financial results from strictly sporting activities, poor sporting results, operating under soft budget constraints, and passive supervision of the club by local governments. The findings suggest that state investors may pursue a broader set of non-commercial objectives other than maximizing financial performance or sporting success, which may affect efficiency but is socially desirable. The results presented in this paper will complement research on the impact of ownership models of European professional football clubs on efficiency with state models in which public sector enterprises, state-owned companies, and local governments exercise ownership or non-ownership control.

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Migrants from Ukraine as an answer to the needs of the Polish labour market: An entrepreneur's perspective

JEL Classification: *C400; D22; F22; J210; J230*
Keywords: *statistics; empirical analysis; labor migration; industry characteristics; labor shortage*

ABSTRACT

Research background: The war in Ukraine has contributed to a surge in migration in Europe. Many Ukrainians found refuge in neighbouring countries on the periphery of the EU, gaining stability, social and economic security. Employers, on the other hand, filled staff shortages, while the state gained additional citizens, mostly of working age.

Purpose of the article: The aim was to identify and try to assess the activity of migrants in relation to the needs of entrepreneurs (taking into account border enterprises on the periphery of the EU).

Methods: The survey was carried out on a sample of 400 enterprises from four border regions of Poland. Correspondence analysis was used to present some of the results graphically. The research was funded by an internal grant from WNE UWM in Olsztyn.

Findings & value added: In order to realise the aim of the research, an original profile of a migrant/refugee entering the labour market and a profile of an entrepreneur who employs this migrant/refugee in relation to his/her own needs and possibilities were created. More than half of the baded companies operated on the local market, 1/3 on the national market and only 2% on the international market. As far as the European market is concerned, 10% of the surveyed companies operate in internal EU markets and 5% in the whole of Europe. They most often employ migrants in the construction, hospitality, trade and services sectors. In more than 50% of companies, migrants work more than 40h. As many as 76% of companies expect that the output/input ratio will be higher after hiring migrants. According to the surveyed respondents from border voivodeships, the most encouraging factors for employing migrants from Ukraine are economic factors, especially greater financial support related to the possibilities to use aid funds of national and EU funds.

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Towards a just transformation: Accessibility as a condition for an inclusive digital economy in Europe

JEL Classification: *I38; K38; O33; O52*

Keywords: *digital accessibility; European Accessibility Act; sustainable development; disability rights; inclusive digital economy*

ABSTRACT

Research background: Digital transformation is one of the key phenomena of global structural change, profoundly affecting the labour market, access to public services, and models of civic participation. However, within this process, the need for digital accessibility remains insufficiently addressed, resulting in the exclusion of persons with disabilities and older adults. The European Accessibility Act (Directive 2019/882) represents a systemic attempt to address this gap within the framework of the EU internal market.

Purpose of the article: The aim is to assess the role of accessibility as a condition for inclusiveness in the European Union's digital transformation and to demonstrate how the European Accessibility Act supports sustainable socio-economic development in the context of a just transformation.

Methods: The study analyses the content of the European Accessibility Act and selected documents and regulations related to the examined issue. The research applies critical content analysis and a normative approach, grounded in the principle of equal opportunities and the UN Sustainable Development Goals (SDGs).

Findings & value added: The findings indicate that digital accessibility is not merely a technical standard but a component of institutional transformation. The European Accessibility Act establishes a legal framework that may serve as the foundation of an inclusive digital economy. Integrating accessibility requirements into digital policy enhances the resilience of service systems, supports social inclusion, and strengthens the economic participation of previously marginalised groups. The added value of the presentation lies in highlighting accessibility as a key instrument of just structural transformation at the European level.

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Regional Smart Specialisations as a tool for developing and fostering innovative growth in enterprises: The case of the Warmińsko-Mazurskie Voivodeship.

JEL Classification: *R58; R11; 021; 030*
Keywords: *smart specialization; regional development; innovation policy*

ABSTRACT

Research background: Smart specialisation is a contemporary paradigm for building the competitive advantage of regions, emphasising the territorial nature of regional development. The concept of smart specialisation was proposed as a new development vision for the European Union, with the objective of enhancing the efficiency of innovation processes. The integration of two perspectives is fundamental to this approach: firstly, a sectoral perspective and secondly, a regional perspective. The purpose of integrating these perspectives is to build competitive advantage at the regional level. Smart specialisations should be firmly rooted in the region's endogenous resources, stemming from its traditions, experiences and socio-economic past, thereby creating its uniqueness. Exploiting their potential and resources, regions can support business innovation and demonstrate the way forward.

Purpose of the article: The objective of the present article is to identify the concept of smart specialisations as a tool for creating regional policy and a support mechanism for the development and growth of business innovation. The Warmińsko-Mazurskie Voivodeship was selected for analysis as a case study.

Methods: A mixed approach was adopted in the research process, incorporating the analysis of foundational data available in reports and public statistics. The analysis and conclusions were also based on a review and critical analysis of the literature on the subject and European Union programme documents, as well as regional innovation strategies, regional development strategies and regional operational programmes. The article expounds on the assumptions of the smart specialisations concept and the methodology of identifying smart regional specialisations. The analysis further explores the role of regional smart specialisations in shaping business development, offering a case study of the Warmińsko-Mazurskie Voivodeship to illustrate this phenomenon.

Findings & value added: The analysis demonstrates that regional smart specialisations play a pivotal role in the development of innovation in companies in the Warmińsko-Mazurskie Voivodeship.

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Key competences needed in the era of digital and green transformation

JEL Classification: *J24; L29; Q56*
Keywords: *competences; ESG; digital transformation; green transformation.*

ABSTRACT

Research background: The dynamically changing needs of the labour market mean that new approaches to development and career management are increasingly appropriate. This is due to rapidly advancing technological change and adaptation requirements imposed by the European Union (specifically, the Corporate Sustainability Reporting Directive (CSRD) on 16 December 2022). The niche nature of ESG specialisations (E — Environment, S — Social Responsibility and G — Corporate Governance) has created a demand for specialists that is currently lacking in the market. Additionally, technological change and the development of AI have accelerated. Thus, it is of interest to ascertain which competences are currently most needed.

Purpose of the article: This article aims to explore which competences of employees in the field of modern technology and in the field of ESG (E — Environment, S — Social responsibility and G — Corporate governance) are needed and key for companies.

Methods: The analysis was conducted on data from a pilot survey study based on an original questionnaire. The sample selection based on non-probability method (quota-sampling), taking into account the dominant type of activity according to the Polish Classification of Activities (PKD).

Findings & value added: It was possible to create survey study based on a.o. EU guidelines contained in the European sustainability competence framework (GreenComp) and the European Digital Competence Framework (DigComp) were considered. This facilitated the identification of the key competences needed in today's turbulent environment. These competencies become the basis for choosing an upskilling or reskilling employees' pathway. This is necessary from the point of view to adapting to change and maintaining competitiveness. Further research should focus on young adults entering the labour market to improve their digital and green skills.

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Empathizing the taxpayer as a new approach to the implementation of property tax change

JEL Classification: *H24; H40; H71; K34; R38; Z13*
Keywords: *property tax; empathy map; design thinking model; fear and anger*

ABSTRACT

Research background: Public goods and services can only be provided through money obtained from taxes, among other things. However, due to their compulsory nature, taxes are hardly socially accepted or avoided. One tax that is difficult to avoid is the property tax. It also often arouses resentment and a sense of injustice. As a result, topics related to property tax, such as the change in the tax base from area to value, are used by authors of articles in the media. This is because fear-saturated newspaper titles attract a lot of "clicks." Thus, they create an atmosphere of fear, which can turn into anger and opposition. Can this be prevented? This article assumes that it is worth using taxpayer empathy for this purpose.

Purpose of the article: The purpose of the article is to prove the thesis and, at the same time, the research problem, which is: "traditionally, tax change takes place in an atmosphere of fear, which can turn into anger and active protest" and to propose a way that is a solution to this problem. The solution may be implementing the tax change per the steps provided by the design thinking model, including empathizing with the taxpayer and actively appearing on his empathy map.

Methods: The study used the following methods to build the empathy map, which is the first stage of the design thinking model: brainstorming by the research team to build three models of the empathy map: self-oriented, taxpayer-oriented, and cognitive. Information collected from 494 taxpayers living in all provinces of Poland was used to build the cognitive model (empirical model).

Findings & value added: As a result, a new approach has been developed that is useful in making controversial changes in fiscal policy. A new data collection tool was also developed.

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Developing an integrated structural model of Green Consumer Purchasing Behavior: A systematic literature review with COM-B framework perspective

JEL Classification: *M10; Q01; Q56*
Keywords: *green purchasing; green consumer; COM-B; ADO; consumer behavior*

ABSTRACT

Research background: Research on Green Consumer Purchasing Behavior (GCPB) has been conducted in many product contexts. However, even though the role of green non-food products and the bioeconomy is significant and continuously expanding with the growing demand for non-food (nF), bio-based products, GCPB analyses in these sector remain fragmented and require systematization to effectively utilize existing knowledge. The COM-B model (capability, opportunity, and motivation) provides an interesting framework for such research.

Purpose of the article: The purpose of this paper is to map research tendencies and systematically analyze and synthesize existing research on the factors influencing GCPB-nF to provide a comprehensive understanding of the drivers of sustainable consumption and to offer foundation for building conceptual structural model as well as well mulitiresearch — grounded justification for practical implications.

Methods: A systematic literature review (SLR) and bibliometric analysis were conducted on 199 peer-reviewed articles sourced from the Scopus database. The selection followed rigorous criteria, including article quality, relevance, and methodological clarity. The Antecedents-decisions-outcomes (ADO) and COM-B model were utilised as frameworks

Findings & value added: The study identifies psychological capabilities, particularly environmental awareness and knowledge, as well-explored, while physical capabilities and automatic motivations remain under-researched. Critical external opportunities, such as social norms significantly influence consumer decisions. Reflective motivations, especially environmental concern and perceived behavioral control, dominate existing research. The review integrates these findings into a structured model, proposing an integrated conceptual framework and highlighting research gaps. This contributes theoretical synthesis and establishes a foundation for future research to enhance sustainable consumer behavior toward non-food green products.

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