



Entrepreneurship and economic development in an uncertain and technology-driven business environment

BOOK OF ABSTRACTS

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A Complex Study of the Effect of Training for Teacher on Financial and Economic Topics

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Background and introduction: In recent years, financial awareness and education have become increasingly important in Hungary. The family is a primary agent in the financial socialization of children and youth, but educators also play a critical role (Cole, Paulson & Shastry, 2016; Mihályi, 2002). Despite this, the financial literacy of teachers has been under-researched, although understanding their knowledge, attitudes, behavior, and motivations is essential. Teachers have a multiplier effect, directly and indirectly influencing the financial awareness and competencies of the next generation (Barrera-Pedemonte, 2016)

Objective: The study aims to evaluate the effectiveness of financial and economic training programs for teachers. It seeks to understand how these programs impact teachers' financial literacy, motivation, attitude, confidence, the perception of their own financial literacy, risk tolerance, and pedagogical effectiveness. Its most important goal is to reveal the differences between those who took part in such training and those who did not, and thereby assess the effectiveness of further training and the long-term sustainability of the acquired knowledge.

Methodology: The aim of our research is a complex analysis of the impact and effectiveness of further trainings in finance and economics (Németh et al, 2022).

To assess teachers' financial literacy, the researchers planning the survey used the methodology developed in 2013 for students in tertiary education and adapted it according to the specifics of the teacher survey. They did not change any indicators characterizing the level of financial literacy in order to make research results comparable, so the main indicators of the financial literacy survey conducted in 2013 and then repeated in 2020 were used in this research, as follows:

- Financial Literacy Index,
- Self-Image Index,
- Risk-Taking Index.

The sample size is 705 people, of which two thirds (68.4 %) are women and one third (31.6%) are men. The age of respondents ranged from 24 to 74 years, with an average age of 50.5 years. 18.2% of respondents teach in primary schools, the majority (75.6%) in secondary schools, while 6.2% in higher education or other institutions. Distribution of subjects taught by teachers: financial or economic (13%); natural sciences (30%); humanities (33%); other (23%).

For processing the questionnaires, we used cross-tabulation analysis and variance analysis, in addition to methods of descriptive statistics. calculations and charts were made using Microsoft Excel and SPSS software applications.

Results: The study found that teachers who participated in financial training showed significantly better financial literacy and knowledge than those who did not ($F=66,07$, $p<0,001$). These teachers were more confident ($F=10,96$, $p<0,001$) and were more aware of finances, exhibited higher levels of financial inclusion, and had greater trust in financial institutions. They also perceived their pedagogical work as more successful and important ($F=49,171$; $p<0,001$). The surprising result of the research is that despite their increased knowledge and confidence, trained teachers were more risk-averse and cautious in financial matters compared to their untrained peers ($F=19,21$, $p<0,001$). This suggests a gap in fostering entrepreneurial skills, which require a certain level of risk-taking.

Conclusions: The research concluded that financial and economic training for teachers effectively enhances their financial literacy and confidence. Nonetheless, the teachers taking part in further training are extremely risk-averse. From the point of view of financial awareness, teachers consider prudent and thrifty behavior to be the most important. All this is understandable, since teachers have a constant, predictable, but not very high income.

The increased risk aversion of qualified teachers can be an obstacle to preparing students to optimally manage financial risks. Improving teachers' financial literacy not only benefits their personal financial management but also positively impacts their teaching effectiveness, contributing to the financial education of their students.

Limitations and future research directions: The research was conducted within a specific national context, potentially limiting the generalizability of the findings. Future research should explore longitudinal impacts of financial training on teachers and their students, investigate the effectiveness of different training methodologies, and consider cross-cultural comparisons to understand how financial education can be optimized globally.

Keywords: financial literacy, teachers, trainings on financial and economic topics

JEL Classification: D14, D91, G41, H31

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A Scientific History of a Global Problem: A Bibliometric Analysis of Food Waste Over the Past 10 Years

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Background and introduction: Food waste is a major issue in the lives of consumers, the environment and in different areas of the supply chain. According to statistics, nearly 59 million tonnes of food are thrown away in the EU every year, representing 131 kg of waste per person, mainly generated by household activities (53%) (Eurostat, 2023). Food waste not only has environmental impacts but also increases the risk of supply chain insecurity, which is why it is important to address the issue and reduce waste (United Nation Environment Programme, 2022).

Objective: The aim of the research is to analyse the literature on food waste using bibliometric methods, the Web of Science Core Collection database and VOSviewer software. The study analyses the literature from 2013 to 2023, with a particular focus on the publication trends of articles written in the last 5 years (from 2018), which indicate the increasing relevance and importance of the topic examining the links between the topic and Supply Chain Management. The study examines the co-occurrence of publications and most cited papers, research areas and keywords.

Methodology: Bibliometric analysis is an indispensable tool in scientific research, designed to measure scientific performance and efficiency on a given topic.

Results: Changes in food consumption habits predict an increase in publications on the subject, making the study novel and timely.

Conclusions: Despite these limitations, the research can make a significant contribution to further research on food waste. Future researchers may wish to extend their searches to alternative data sources, such as Scopus or Google Scholar, and to consider papers in different languages and formats. The use of different digital bibliometric software can also enrich the analysis, as it can provide a different perspective on the data. The research could be useful for further exploration of the topic, to inform future research and to identify future research trends and directions. Changes in food consumption patterns predict a sustained increase in publications on food waste worldwide, making this study novel and timely, contributing to the achievement of sustainability goals.

Limitations and future research directions: However, the analysis has several limitations. One of the main limitations is that it only examines articles that appear in the WoS database, ignoring other sources such as Scopus or Google Scholar, which may also contain relevant articles. This means that important studies available in other databases may have been omitted from the present analysis. In addition, only peer-reviewed articles in English were analysed, excluding papers written in other languages and in other formats

(e.g. book chapters, ongoing studies, early access material and editorials). For data analysis, only the VOSviewer software was used, the results of which may be subjective to some extent, as the interpretation of bibliometric maps is not always clear.

Keywords: food waste, environmental protection, systematic literature analysis, bibliometric analysis

JEL Classification: M20



Analysis of Sustainable Urban Mobility Plans in Europe: Impact of strategies on Carbon Emissions Reduction Using Multiple Regression

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Background and introduction: In recent years, Sustainable Urban Mobility Plans (SUMP) have emerged as crucial tools in tackling urban mobility challenges amidst rapid urbanization, congestion, and environmental degradation. Despite substantial investments in eco-friendly transportation modes, infrastructure, and policies, determining the most impactful measures for reducing the carbon footprint remains ambiguous.

Objective: This study rigorously analyses Sustainable Urban Mobility Plans (SUMP) across Europe, emphasizing their effectiveness in reducing carbon emissions. Through comprehensive examination, it evaluates the impact of strategies delineated within these plans on mitigating environmental degradation.

Methodology: The methodology employed combines qualitative exploration of various Sustainable Urban Mobility Plans (SUMP) in Europe with subsequent quantitative analysis using multiple regression. This approach assesses the efficacy of strategies outlined in SUMP for mitigating carbon emissions in urban areas. The research analyses a comprehensive dataset encompassing diverse urban environments across Europe to identify key factors contributing to carbon emissions reduction within the framework of sustainable urban mobility planning.

Results: This study aims to offer insights to policymakers, urban planners, and transportation experts regarding effective strategies to enhance environmentally friendly urban mobility, thereby promoting sustainability and improving residents' quality of life. It also serves as a framework for cities striving to optimize their efforts in developing Sustainable Urban Mobility Plans (SUMP).

Conclusions: This research provides valuable insights to inform evidence-based strategies for advancing sustainable urban mobility agendas. Despite substantial investments in eco-friendly transportation modes and policies, the identification of the most impactful measures for carbon footprint reduction remains complex. Through meticulous analysis, this research provides critical insights into the efficacy of SUMP in mitigating carbon emissions and fostering sustainability. These findings offer a roadmap for policymakers, urban planners, and transportation experts to optimize strategies and advance environmentally friendly urban mobility, thereby enhancing residents' quality of life.



Limitations and future research directions: Include the complexity of urban mobility dynamics and the need for more comprehensive data. Additional limitations may encompass constraints related to the scalability and generalizability of findings, as well as potential biases inherent in data collection and analysis methods. Future research could focus on integrating emerging technologies like artificial intelligence and big data analytics to enhance urban mobility data accuracy.

Keywords: Sustainable Urban Mobility Plans, Carbon Emissions, Sustainability.

JEL Classification: Q01



Aspects of Well-being at Work: the Role of Satisfaction and Work-Life Balance

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Background and introduction: The events of recent years have fundamentally transformed the world, with a major impact on workers' preferences. It is therefore essential for organisations to adapt their well-being practices in the workplace to meet the new expectations of employees, as the solutions that worked in the past may no longer be effective. The health and well-being of employees is an integral part of the success of a company. Increasing productivity and efficiency can be achieved by supporting the well-being of employees, which also brings economic benefits.

Objective: The aim of this research is to provide a comprehensive overview of the concept of well-being at work and its key elements, as well as their role and importance in organisations, based on national and international literature. In addition, I aim to explore through primary research the well-being preferences of employees and the well-being practices adopted by organisations.

Methodology: The literature review was based on the PRISMA recommendation. Quantitative and qualitative methods were used to conduct the primary research. We measured the impact of factors influencing well-being by online questionnaire (n=323).

The data were analysed using different statistical methods. The aim of the Kano model was to explore the impact of different workplace factors on well-being. In addition, the data collected allowed for the performance of binary logistic regression and K-means cluster analysis.

Results: The most significant socio-demographic variable is the nature of work, which affects six well-being factors. This is followed by education, which also shapes five factors. Four are influenced by gender, residence, income status and sector. Occupation influences three factors, and generation, marital status, industry and group work are the least influential on well-being factors.

Conclusions: Companies should pay particular attention to employee relations and pay in wellbeing practices, as these are influenced by gender, education, job title and the nature of the work. It is recommended that organisations place greater emphasis on measuring well-being at work and incorporate continuous improvement of well-being practices into the daily routine of HR professionals.

Limitations and future research directions: Expanding the number of interviewees and even including other sectors can help to get a comprehensive picture. In addition, we collected the questionnaire responses using a snowball method, which can be improved and supplemented in the future.

Keywords: job satisfaction, Kano model, PRISMA statement, well-being, work-life balance

JEL Classification: M54



Assessing Corporate Well-being

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Background and introduction: Interventions implemented to ensure organizational and employee resilience and well-being can significantly mitigate crises that pervade the world of work and their negative consequences and increase performances, underlying motivations, and satisfaction (Rezsőfi et al., 2022). Resilience helps managers and employees to deal with the consequences of changes and crises and to manage change and crisis management processes (Szabó et al., 2019). The ultimate goal of increasing organizational well-being is increasing employee motivation, satisfaction, and commitment (Rethinam & Ismail, 2008).

Objective: The research's main goal is to examine the factors influencing employee and organizational well-being in the framework of the changing domestic labor market and employment conditions. The specific goals of the research include clarifying the expectations arising from the workplace and the family environment, the factors determining job satisfaction, and the relationships between the workplace and employee well-being under changing conditions.

Methodology: Among the selection criteria for the sample was that, during the investigation, we directed our attention to medium- and large-sized companies with headquarters or premises in Hungary, in terms of the number of employees and companies with a mixed distribution in terms of sector affiliation. In the data collection phase, we use online questionnaires, semi-structured interviews, and statistical data collection. On the one hand, we process the data using computer mathematical statistical methods (SPSS), and document and interview analyses will also be used.

Results: A total of 201 completed and evaluable questionnaires are available. The majority of respondents are inspired by their work (57%), they know their strengths, which are necessary for good performance (87%). They can implement their plans in practice (51%), like to delve deeper into their tasks (82%), and can provide excellent performance at work (75%). 77% of respondents can turn to their colleagues with confidence, look optimistically into the future (71%), are satisfied with their workplace relationships (71.6%), resolutely strive to achieve their goals (82%), and have the opportunity to bring out the best in themselves (68%). A result contradicting the ideal conditions emerging from the aforementioned results was also obtained. 14% of respondents feel positive, 28% cannot decide, and 32% only partially feel positive by going to the workplace.

Conclusions: Most of the respondents judged their conditions positively regarding the issue of workplace well-being, however, somewhat contradictory results were also obtained, which can only be interpreted in a broader context.

Limitations and future research directions: In the sample based on non-random selection, we aim to achieve national "coverage" in terms of the geographical distribution of companies and enterprises, but this depends on the willingness of the respondents. Soon, we will strive to produce further results and establish the relationships between them.

Keywords: change, crisis, resilience, organizational and employee well-being.

JEL Classification: JEL I31 General Welfare, Well-being.



Assessing the Impact of Technology-Driven Business Environments on Employees' Mental Health in Higher Education - a Methodological Review

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Background and introduction: With the rapid transformation from traditional in-person interactions to high-level integration of digital tools and platforms in academic institutions has raised concerns about its impact on employee well-being. Understanding how these changes affect mental health is crucial in today's technology-driven business environment.

Objective: This study aims to assess the range and efficacy of methodologies used in investigating the impact of technology-driven business environment on employees' mental health within the higher education sector. The review is expected to reveal a diverse range of applied methodologies, each with advantages and limitations. It is hypothesized that quantitative studies might predominantly rely on self-report questionnaires, potentially lacking generalizability, while qualitative approaches may provide deeper insight into the subjective experiences of employees but might suffer from issues of scalability and bias.

Methodology: This study is a methodological literature review incorporating empirical studies from the past decade that examine mental health outcomes among higher education academic and administrative staff in technology-intense environments. The review will systematically analyze the methodologies employed in these studies, including research design, sample characteristics, data collection methods, measurement tools, and analytical approaches. Special attention will be given to applicability, as well as the strengths and limitations of each methodology.

Expected Results: The review is expected to yield insights into the diversity of methodologies used in studying the impact of digitalization on mental health within higher education. By identifying prevalent approaches and their respective strengths and weaknesses, this review aims to provide guidance for future research endeavors in this domain. Additionally, the synthesis of methodological findings will contribute to the ongoing discourse on best practices for investigating technology-related mental health issues in academic settings.

Conclusions: Through a methodological lens, this review underscores the importance of employing rigorous and contextually appropriate methodologies, and the need for more comprehensive research designs in studying the footprint of digitalization on employee mental health. The study will advocate for the adoption of mixed-methods approaches that combine the strengths of both quantitative and qualitative



research techniques to offer better insights into how technological changes influence mental health over time.

Limitations and future research directions: While this study aims to comprehensively analyze existing methodologies, it is subject to limitations inherent in the availability and scope of published literature. The review is limited to articles published in English language and registered in the Scopus database. This restriction may inadvertently exclude valuable contributions published in other languages than English or non-Scopus-indexed sources.

Keywords: technology-driven business environment, mental health, workplace well-being, higher education sector

JEL Classification: M54 Labor Management



Blockchain's Role in Cultivating Trust Among Actors in Sustainable Food Supply Networks

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Background and introduction: Building trust among stakeholders is crucial for the integrity and ethical sourcing of food products within sustainable food supply networks. However, traditional supply chain systems often lack the transparency and accountability needed to foster trust among consumers, producers, distributors, and retailers. Blockchain technology, with its inherent features of transparency, immutability, and decentralization, offers a promising solution to address this trust deficit in the food industry. Its potential to bolster accountability and empower consumers to make informed decisions about sustainably and ethically sourced goods makes it a transformative tool for nurturing trust within sustainable food supply networks. This paper explores the potential of blockchain technology to revolutionize trust within these networks.

Research Questions:

- 1.How does blockchain technology contribute to trust-building among actors in sustainable food networks?
- 2.What strategies can be employed to effectively implement blockchain for trust-building in sustainable food networks?
- 3.What are the perceptions and experiences of stakeholders regarding the role of blockchain in fostering trust within sustainable food networks?

Research Hypothesis:

RH1: Blockchain technology enhances transparency and trust among actors in sustainable food networks by providing immutable records of transactions and product information.

RH2: Food networks actors perceive blockchain technology positively as a tool for fostering transparency and trust in sustainable food networks.

Objective: To systematically analyze the mechanisms by which blockchain technology fosters trust among actors within sustainable food supply networks, identifying specific applications, assessing their impact on building trust, and investigating the strategies employed by stakeholders to overcome adoption barriers. This research will elucidate the multifaceted role of blockchain in cultivating trust, ultimately contributing to the development of a more transparent, resilient, and sustainable food ecosystem.

Methodology: This study investigates the impact of blockchain technology on trust within sustainable food supply networks using a mixed-methods approach. In-depth interviews with 28 professionals from diverse stakeholder groups, selected through purposive sampling with expertise in blockchain technology and



sustainable food supply chains, explored blockchain's impact on trust and the challenges encountered. The interview transcripts were analyzed using Atlas.ti software, employing grounded theory, to identify key themes and insights. Additionally, in the second step, a questionnaire survey was conducted between August 2022 and April 2024, targeting consumers, producers, retailers, and policymakers at the organizational level with more than 100 participants. Preliminary findings suggest that blockchain technology can enhance trust for end users while improving transparency and traceability within networks, but adoption challenges remain. The quantitative data will be analyzed using SPSS. By integrating qualitative and quantitative findings, the study aims to develop a comprehensive model for guiding future blockchain adoption and trust-building initiatives, specifically focusing on the role of decision-makers in creating a more sustainable food system. All participants provided informed consent, and anonymity and confidentiality were maintained throughout the research process.

Results: This research explores the potential of blockchain technology to cultivate trust among actors in sustainable food supply networks. In-depth interviews with 28 experts, combined with survey data from over 100 professionals, revealed that blockchain is perceived as a valuable tool for enhancing trust in two distinct ways. End-users trust blockchain as a secure and transparent platform, providing a verifiable record of a product's journey, while upstream actors within the food supply network view blockchain as a vital tool for enhancing transparency and traceability. This improved data sharing and visibility fosters trust and collaboration between producers, processors, retailers, and other stakeholders. Qualitative data analysis further confirmed the importance of transparency between upstream actors, with 20%. By providing a shared, immutable record of transactions and product information, blockchain promotes greater accountability and reduces the risk of fraud or misrepresentation, strengthening the overall integrity of the food system and contributing to a more sustainable and ethical food future. This research offers a comprehensive understanding of how blockchain technology can cultivate trust among both end users and internal actors within sustainable food supply networks, highlighting its potential to strengthen the entire system.

Conclusions: This research demonstrates that blockchain technology can significantly enhance trust and transparency within sustainable food supply networks, benefiting both end users and actors within the network. The findings show that blockchain's ability to provide a clear, immutable record of a product's journey from farm to table not only increases logistical power but also permit consumers with greater transparency and assurance about the origin and production of their food. This, in turn, promotes more responsible consumer choices, contributing to a more sustainable and equitable food ecosystem. The research highlights the potential of blockchain to drive a paradigm shift toward a more ethical and sustainable food system, encouraging greater accountability and collaboration between stakeholders across the entire food supply chain.

Limitations and future research directions: The research highlights the potential of blockchain to enhance trust in sustainable food networks, but further research is needed to address limitations, including limited empirical data, participant representation, evolving consumer mindsets, and regulatory frameworks. Future research should explore these areas to create a more comprehensive understanding of blockchain's impact on the food system.



Keywords: Blockchain Technology, Sustainable Food Supply Network, Trust

JEL Classification: O1, Q1

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Comparative Analysis of Traffic Accidents in Visegrad Cooperation Countries

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Background and introduction: In the 2000s, more than 5 million people in the world have been injured because of accidents, of which traffic accidents caused the death of 1,2 million people in every year. If we look at all deaths caused by injuries according to the underlying causes, traffic accidents account for 25%, self-harm 16%, falls 6%, drowning 9%, while war, based on a 2000 study responsible for 6% [1]. In terms of age groups, traffic accidents and acts of violence are the leading causes of death for the over-65 age group worldwide, with serious injury and death resulting from accidents occurring between the ages of 16-35 being significant [2] In 1998, the death due to traffic accidents was the eighth most common cause of death in the world, and in 2020 it was already in third place.

Objective: The aim of our research is to prepare a comparative analysis that highlights the differences of the traffic accident statistics of the Visegrád countries. During the investigation, root causes may be revealed, the regulation of which makes it possible to reduce the number of traffic accidents with a fatal outcome. In addition, it highlights the definition of vulnerable age groups and pays special attention to the education of these age groups.

Methodology: Descriptive statistical comparative analysis

Results: In Poland, there was the biggest decrease in fatal traffic accidents, -50% compared to the statistical data of 2010, however, the numbers of other investigated countries increased significantly. The human factor is responsible for the largest percentage of traffic accidents, which holds for all Visegrád countries.

Conclusions: The human factor is responsible for the largest number of accidents. Speeding and not giving the way at priority signs are the main causes. Of course, continuous inspections and improvement of the road network would reduce the negative effects of these factors.

Limitations and future research directions: The reporting of statistical data by countries do not uniform. Several countries do not publish extensive national statistical data, for example, on the cause of accidents.

Keywords: road traffic accidents, Visegrad Four, road deaths, traffic statistics

JEL Classification: I15, I18, I19, L92, O18, P36, P46, R41

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Conceptual and Methodological Problems of Measuring Spatial Happiness

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Background and introduction: The happiness and well-being of urban inhabitants have played a central role in urban thinking and politics since ancient times. Initially happiness was research subject of philosophy, then the subject of psychology, sociology and political science (Diener et al 1998, Lane 2000), in economics happiness research started at the end of the 20th century, connected to Easterlin's research (1974). Although the empirical literature examining the most important economic elements of well-being and happiness is based on observations in spatial locations, the determination of spatial aspects and dimensions of happiness is rarely researched only with some exceptions (Clark et al. 2005, Aslam, Corrado 2007, Brereton et al. 2008, Ballas 20013).

Objective: In the course of research so far, no scientific consensus has emerged in defining the concepts of welfare, well-being, life-satisfaction, quality of life and happiness. The use of terms in the literature is rather chaotic, Currently, there is no agreement between researchers in defining happiness and its related constructs. The meanings of happiness may depend on the context. So the first problem we face is the problem connected to the conceptualization of happiness, well-being. The next problem is whether it is possible to measure happiness. If we agree that happiness is possible to measure still remain some methodological problems, and the spatial dimensions of happiness will further amplify problems related to the measurement of happiness.

The main objective of our paper is to present the theoretical and methodological problems of measuring spatial happiness, and offer ways of handling these problems where it is possible.

Methodology: In our paper we will give a detailed and comprehensive overview on theoretical findings, problems of the notion of happiness, and critical assessment of research methods used in measuring happiness. The strengths and weaknesses of different research methods will be explored. Finally we will suggest solutions for the defined theoretical and methodological problems.

Results: If we agree that happiness is possible to measure still remain some methodological problems:

- The weighing and aggregation of indicators will greatly influence the final results.
- In many cases the used indicators and the results are very similar to that measuring „development”.
- The approach basically follows and is based on Western European values.



- There are issues with the extreme ends of the scale, both of which are difficult to interpret in a way that would allow the results to be normalized, combined, and averaged.
- There is also the problem of reading too much precision into a vaguely defined numerical scale applied to qualitative phenomena.

With territorial dimension new methodological problems are coming:

- The problems of data collection.,
- We use the same indicators and weighing for all regions or settlements. But is it true that all indicators have same importance in all regions?
- Is the source of happiness or unhappiness purely personal or do spatial/contextual factors matter? (and if they do, to what extent?) How to differentiate personal and spatial elements?
- If social comparisons are important, what is the spatial scale at which people make their social comparisons?
- Do levels of happiness among individuals reflect different characteristics of residents in different districts and regions and areas (compositional effects) or whether there are environmental, geographical or other factors ?
- And finally, policy based on happiness raises several ethical and political conundrums.

Conclusions: Many people seem to object to the use of subjective data based on serious, but non-specific, worries about cardinal comparability—something just seems ‘weird’ about quantifying and comparing feelings. By identifying all the places where cardinal comparability might fail, and indicating it doesn’t, it should help sceptics and enthusiasts recognise exactly where they differ, thus allowing more productive disagreements. Using distinct questions and methods, it is possible to measure both hedonic and eudemonic aspects of happiness. Imperfect memory effects can be solved by using experience sampling or day reconstruction. Asymmetry and unclear definitions can be solved by getting all the researchers on the same page and making them use the same definitions. Response style differences can be addressed by directional balancing of questions and ungodly amounts of controls.

Although it’s difficult and complex to measure happiness, a decision to measure it, and a commitment to consider what might improve spatial well-being, has the potential to make a real difference.

Limitations and future research directions: There is no simple solution for all the theoretical and methodological problems of measuring spatial happiness and sometimes the solutions are making assessment too expensive and complicated to carry out in real life. Future research needs to address to find balance between solving methodological problems and conducting quality assessments in real life.

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Keywords: measurement of happiness, spatial happiness, methodological problems

JEL Classification: R0, O18, I31

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Consumer Motivation to Buy and Use a Battery Electric Car - Systematic Literature Review

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Background and introduction: Trends are everywhere. We can study them in different disciplines, including transport. The car is the dominant means of our daily mobility, and its number is constantly increasing worldwide and in Hungary as well. However, this has irreversible consequences in terms of drastically decreasing quantities of raw materials used and consumed, or in terms of global air pollution and global warming. Today, the issue of the electrification of vehicles and the spread of electric vehicles is actively present in transport discourses. There is no consensus on the benefits of this innovation or its positive impact on transport. Many believe that using these vehicles means cleaner transport, as they do not emit any pollutants and can be charged from renewable energy sources, while others believe that there is no justification for these means of transport and stick to the old technology. We are confident that there is a rational decision making behind the use of battery electric cars, which can be a means of self-expression (status symbol, trendiness) or a means of sustainability. The number of e-cars is steadily increasing both globally and domestically. Our previous research shows that the role of e-car use is becoming increasingly important in our country, and the associated charging infrastructure is being continuously developed. Our research on the subject also shows that there are different motivations behind the decision to buy an e-car. In the present research, we aim to provide a comprehensive picture of the main motivations of those who have bought and use e-cars, as revealed by the results of the international literature. Our research questions are: what are the reasons for consumers to use e-cars and what is the role of sustainability aspirations in the purchase and use of electric cars?

Objective: The aim of this study is to explore the motivations and reasons why people who use pure electric cars choose this form of transport, using a systematic literature review. We hypothesise that the need to achieve sustainability may be one of the main motivations.

Methodology: In the systematic literature analysis, a search query is run in four different databases (Academic Search Complete, Econlit, Scopus, Web of Science), filtered according to specific steps. The international studies that best answer the research question will be uploaded into the Zotero application and analysed, processed, and summarised to answer the research questions.

Results: The results show that, although the use of pure electric cars is still subject to trade-offs, or at least sometimes more cumbersome than conventional cars, the underlying motivation is related to several areas, including sustainability.



Conclusions: The results obtained through a systematic literature analysis will contribute to the understanding of the consumer behaviour of pure electric car users, which is essential for the publication of our further research.

Limitations and future research directions: Several limitations were identified in the analysis. The language of the search query created for the analysis is English, and the language of the studies obtained from the English-language databases is not Hungarian, so domestic studies and results in this area are not included in the results. Furthermore, it can be concluded that the majority of the studies identified as relevant in the systematic literature review use quantitative methods, while the specificities of the area may make it worthwhile to use qualitative methods. We intend to use qualitative methods in future research in the area of consumer behaviour of battery electric car users.

Keywords: electric car, consumer behaviour, systematic literature review

JEL Classification: M31, Q56



Corporate Aspects of Human Resource Management and Artificial Intelligence

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Background and introduction: Artificial Intelligence [AI] has decades of history, and the role of AI in hybrid corporate reality is now unquestionable (Boehmer – Schinnenburg, 2023; Tinguely – Lee, 2023). The achievements of digitalization simplify, facilitate, and transform many business processes; furthermore, Human Resource Management [HRM] processes can be efficiently supported by various AI-based systems. A significant amount of data is related to organizational operation and Human Resource Management, which justifies the integration of AI into HR operational procedures (Nawaz et al., 2024). In the field of HRM, AI-based expert systems can be used from the first step of strategy development and operational work of recruitment to the process of employee offboarding and exit management (Pillai - Sivathanu, 2020; Jatobá, 2022; Franca et al., 2023). By leveraging predictive models and exploratory analytical analytics, HR professionals can make informed decisions (Meenal et al., 2021; Kelan, 2023; Marín Díaz et al., 2023). We assume that the effective support of the AI-based decision system depends on recognizing possible areas and highlighting where the human factor is essential in decisions. We cannot rely solely on the computer's decision in the context of human-machine interactions. Based on these reviewed papers, our main research question is in what areas AI appears as a decision support system in Human Resource Management.

Objective: In various human resource management tasks, uncertainties of varying degrees may occur, which is difficult to exclude from human activities alone. If HR cannot perform its task (efficient work-employee arrangement), then the company's development will not be sustainable; it will not adapt effectively to the external environment. The study aims to identify HRM areas where artificial intelligence appears as an effective decision-support system, highlighting segments where the involvement of human factors in decisions is indispensable.

Methodology: In the study, by synthesizing international literature, we explored the areas and tasks of Human Resource Management where the decision-supporting role of artificial intelligence can be perceived. The literature search was conducted based on the framework of Mueller-Bloch and Kranz (2015) to explore research gaps and areas. Following this method, after defining the purpose of the research and conceptualizing the key terms, a narrowed literature search was conducted in the Web of Science database along with the selected keywords. We analyzed and evaluated the results by our research objective and

identified possible research gaps, which we summarized. From the framework to identify the research gap, the study focuses on localization strategy; therefore, further related steps are not the subject of this study.

Results: The decision-support functions of artificial intelligence have many advantages over traditional data analysis and decision-making methods. In the future, we expect the increasing involvement of artificial intelligence in the field of HRM and the application of intelligent automation by AI. Help transform HRM using AI applications in job change, recruitment, selection, training, performance management, succession management, and decision-making (Eional – Khoreva, 2022; Kelan, 2023; Franca et al., 2023; Suen – Hung, 2024.). Our research identified the essential HRM areas, dilemmas, and the possibilities of involving appropriate AI methods. By synthesizing literature and empirical findings, the study contributes to understanding the application of AI in HR processes and its role as decision support. It also offers practical implications for HR professionals who wish to use an AI-based expert system to drive sustainable organizational success.

Conclusions: AI-based systems and technologies offer a new approach to human resource management (Nawaz et al., 2024). In business and HR, it is necessary to find a point where artificial intelligence can help improve efficiency, primarily as an intelligent automation tool. It should be emphasized that AI does not replace human responsibility in decisions but can make the decision-preparation process transparent. We recommend HR-AI cooperation, in which different tasks and decisions can be categorized. There is a significant need for careful planning on topics such as AI's raison d'être, the emergence of a high-risk environment, and the threat AI poses to workers' professional identities. The role of human resources professionals in the smooth resolution of disputes should be highlighted (Tinguely – Nicolas 2023).

Limitations and future research directions: One of the fundamental limitations of this study is that it focuses on a specific phase of the Mueller-Bloch and Kranz (2015) research gap concept. At the same time, it also predestines the future primary research direction, the investigation of further steps of the concept.

Keywords: human resource management, artificial intelligence, decision-support, AI-based expert system, research gap localization

JEL Classification: M12, O32, D91, M51

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Critical Raw Materials and EU's Green Transition

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Background and introduction: With the European Green Deal, the EU has made the fight against climate change and the transformation of its economy a key strategy. The European Green Deal is a commitment to reduce greenhouse gas emissions by 55% (Fit for 55%!) by 2030 compared to 1990 levels.

The green transition from fossil fuels to renewable energy sources requires critical raw materials and the import could lead to new dependencies (Andersen et al., 2024). China's dominance (as an international developer of green technologies and exporter of materials, components and end products) poses a potential supply risk for the EU, as 19 of the 30 raw materials identified by the EU as critical for the transition are located in China (Noyan, 2022).

The sourcing of lithium, one of the most important critical minerals, is characterized by two trends: the countries of the 'Global North' have outsourced mining but are now looking to reverse this trend to secure supply chains; additionally, they aim to source lithium from sustainable origins (Riofrancos, 2023).

The European Union's new battery regulation is an ambitious effort to regulate the entire life cycle of the global battery industry. However, it remains to be seen whether it can have a real impact on environmental and social aspects (Johnson and Khosravani, 2024).

Objective: In this paper, we examine how the European Union's lithium supply has evolved in recent years, how imports of lithium-ion batteries into the EU have changed, and how these developments have affected the GDP and GHG emissions of the Member States.

Methodology: To achieve these objectives, we used a combination of qualitative and quantitative research methods. We conducted a literature review to understand the current state of lithium sourcing and battery regulation. Data on lithium imports and their economic impact were collected from various EU databases and analyzed using statistical methods to identify trends and correlations.

Results: Our analysis shows that the EU's lithium supply has become increasingly diversified. The import of lithium-ion batteries into the EU has increased substantially, driven by rising demand for electric vehicles and renewable energy storage solutions. This increased import activity has had a notable impact on the GDP of Member States, contributing to economic growth in sectors related to green technologies. However, the environmental benefits, in terms of reduced GHG emissions, have been mixed and largely dependent on the sustainability practices of the lithium supply chain.

Conclusions: The European Union's efforts to secure a stable and sustainable supply of lithium are crucial for the success of the Green Deal. While significant progress has been made in diversifying lithium sources and increasing battery imports, challenges remain in ensuring that these activities lead to meaningful environmental benefits.

Limitations and future research directions: This study has several limitations, including the need to examine all aspects of the environmental impacts of the lithium supply chain. Future research should investigate the life cycle of lithium batteries, including recycling and disposal. Another potential area of research is the examination of the social impacts of lithium mining and sourcing practices to ensure that the green transition is both environmentally and socially sustainable.

Keywords: EU, green transition, lithium, GDP

JEL Classification: O32; O44; P18; Q56

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Digital Literacy challenges in Higher Education, Case of University of Shkoder

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Background and introduction: In today's digital age, the concept of digital literacy has become increasingly vital, shaping the landscape of modern education in profound ways. At its core, digital literacy encompasses a broad spectrum of competencies essential for navigating the complexities of the digital world. It is not merely about knowing how to operate devices or access information online, rather it involves the ability to critically evaluate, utilize, and create digital content effectively. Digital literacy is more than just a set of technical skills. It is about fostering mindset of inquiry, adaptability, and ethical responsibility in an interconnected world. Media literacy equips people with the tools to deconstruct media messages, recognize underlying biases, and engage critically with the content they consume. In an era where misinformation proliferates online, this ability to discern fact from fiction is indispensable. This rapid advancement of digital technologies is reshaping also the landscape of higher education globally. Universities are increasingly required to integrate digital tools and platforms to enhance learning, teaching, and research. The University of Shkoder (USH), like many institutions, faces challenges in adapting these changes. This research explores the current state of digital transformation at the USH and challenges to foster collaboration and innovation.

Objective: Discuss the implication the higher education institutions go through while on digital transformation and describe a good practice for digital transformation to enhance educational outcomes and collaboration while discussing the case of University of Shkoder.

Methodology: This research is based on the case study as it allows a detailed and comprehensive exploration of the case, enabling rich qualitative data through deep observations

Results: This study shows the difficulties and challenges an HEI faces while going through changes. The insights gained help developing tailored recommendations that are likely to be effective, but also can provide a strong foundation for implementing practical changes.

Conclusions: The study highlights significant gaps in digital literacy and infrastructure at the University of Shkoder. Addressing these gaps through targeted interventions can enhance educational outcomes and better prepare students for digital economy.



Limitations and future research directions: Further research is needed to explore the long-term impacts of digital transformation initiative to identify best practices for integrating digital technologies into higher education.

Acknowledgement: The study is realized in the framework of U2SID - University to Society Collaborations for Inclusive Digital Transformation in the Western Balkans, an Erasmus+ CBHE funded by the EU. A special acknowledgement also to the University of Shkoder for supporting this research.

Keywords: change, digitalization, digital transformation, higher education

JEL Classification: I23



Doctoral Degree Experiences at the University of Debrecen

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Background and introduction: Doctoral programs in Hungary offered by prestigious universities across the country, attract a diverse cohort of students from various academic backgrounds. These programs not only emphasize theoretical knowledge but also provide extensive opportunities for practical application (Cooperative Doctoral Program), thereby preparing graduates for careers in academia, industry, and beyond. Furthermore, the Hungarian government and various academic institutions offer a range of scholarships and funding opportunities to support doctoral students, making these programs accessible to a wider audience.

Objective: The aim of this research is to explore the characteristics of doctoral students' doctoral degree acquisition process and their experiences of it, and its impact on their career. The research focuses on the experiences of doctoral graduates from the second largest university in Hungary.

Methodology: The research was conducted through a questionnaire survey, which is carried out by the University of Debrecen's Scientific Directorate prior to each doctoral inauguration ceremony. The study analyzed the responses of doctoral graduates (n=119, 70% of the population) from the 24 doctoral schools of the University of Debrecen between December 2023 and May 2024. The sample was taken prior to the doctoral inauguration ceremony in May 2024. In addition to Hungarian doctoral graduates, we also analyzed the responses of foreign doctoral students.

Results: The results showed that the highest number of graduates in the study period obtained their degrees in medicine and health sciences. Most respondents considered the doctoral education at the University of Debrecen to be of high quality, both nationally and internationally. For the respondents, supervisors are of great importance in the process of obtaining their doctoral degree, as the results show that supervisors have contributed significantly to the success of doctoral students in obtaining their doctoral degree. The results show that Over two-thirds attended international conferences, primarily funded by the university or grants. The results also showed that the process of obtaining a doctoral degree helps the job search process of the graduates, but the extent of this is not very significant. As for post-degree employment, most of them were in universities or colleges and in industry.

Conclusions: Based on the results, the following recommendations could be made: to collect regular feedback from doctoral students, both Hungarian and foreign, to introduce career-oriented courses and to develop career change programs. These are ways in which an institution can help its PhD students find a



job, either in academia or in business. In summary, the results highlighted the high quality of training offered by the doctoral schools of the University of Debrecen and the impact of doctoral degrees on job search.

Limitations and future research directions: A limitation of the research is that the experiences of students who have obtained a PhD degree were examined over a shorter period of time, so the number of items is relatively low. As a future direction, it is worth extending the research, going back several years, to increase the number of items and to explore the experiences of those who have previously obtained a doctorate. It may also be useful to examine the views of graduates from other universities' doctoral schools, thus creating a comparative study.

Keywords: doctoral education, job search, PhD, supervisor, University of Debrecen

JEL Classification: I23



Empowering Regional Development: Unraveling the Impact of Bottom-Up Organised Cultural and Creative Industries in Szigetköz

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Background and introduction: The determinants of sustainable regional development have been extensively discussed in academic literature. While it is widely acknowledged that cultural and creative industries (CCIs) can drive development, the role of bottom-up organized CCI initiatives in sustainable regional development remains a subject of inquiry. Building upon previous research in the Szigetköz area which highlighted the significance of bottom-up organized CCI enterprises, this study aims to explore the factors crucial for stimulating sustainable regional development through bottom-up organized CCIs, as well as the barriers to such efforts.

Objective: In the initial phase of this spin-off research, secondary data collection was utilized to identify prominent bottom-up organized CCI enterprises in the Szigetköz area, operating for a minimum of five years and contributing to further development in their immediate surroundings. Subsequently, 12 in-depth interviews were conducted: two with Szigetköz experts, two with municipal mayors, and eight with entrepreneurs or organizations that have initiated bottom-up efforts and sustained operations for at least five years. Despite a high rejection rate for interviews, the selected participants represent a diverse spectrum of the Szigetköz CCI landscape.

Methodology: The research has identified several key factors contributing to sustainable regional development through bottom-up organized cultural and creative industry (CCI) endeavors. Firstly, such enterprises have showcased considerable potential in bolstering economic, cultural, and social progress in the Szigetköz region. This is evidenced by their role in job creation, stimulating demand, fostering creative vitality within communities, serving as tourist attractions, facilitating educational activities, and fostering networking and collaboration. Secondly, insights garnered from in-depth interviews shed light on the operational mechanisms of successful CCI ventures. Despite encountering challenges in participant recruitment, the selected interviewees provided a comprehensive overview of the CCI landscape in Szigetköz.

Results: The study underscores the crucial role of bottom-up organized CCI enterprises in nurturing sustainable regional development. The findings highlight their significance in catalyzing economic expansion, safeguarding cultural heritage, and bolstering social cohesion in the Szigetköz region. Additionally, the identification of key success factors and barriers offers valuable insights for policymakers, stakeholders, and aspiring entrepreneurs aiming to harness the potential of CCIs for regional advancement.

Through support and cultivation of bottom-up CCI initiatives, policymakers can foster an environment conducive to innovation, creativity, and prosperity in Szigetköz and analogous areas.

Conclusions: Notably, the study encountered challenges in recruiting participants for in-depth interviews, resulting in a constrained sample size that may have introduced selection bias and limited the generalizability of the findings. Future research endeavors could explore cross-regional or cross-national comparative analyses of CCI initiatives to glean insights into contextual influences on their success and sustainability. Additionally, investigating the impact of digital technologies on CCI operations, particularly in light of evolving consumer behaviors, presents a promising avenue for further inquiry.

Keywords: bottom-up organised development, cultural and creative industries, sustainable regional development, CCI entrepreneurship

JEL Classification: R11



European Capital of Culture 2010/2023 – Comparative Study and Insights into Two Dance Projects/Festivals (2010 Pécs / 2023 Veszprém)

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Background and introduction: The European Capital of Culture (ECoC) project is a special, unique, and successful cultural initiative of the European Union. The ECoC-program is well-known and has a substantial library of reports, books, and articles. It presents the diversity of European culture, focusing on the cultural values and dimensions of cities. In 2010 and 2023, two Hungarian cities won the title of European Capitals of Culture: Pécs and Veszprém.

Objective: In addition to presenting the theoretical framework and background, the study focuses on the dance projects implemented in these two cities. Its aim is to describe two case studies (dance festivals) and to compare one dance performance in Pécs and one in Veszprém in terms of vision, plan, infrastructure, institutional location, artistic concept, realization, professional reflection, and other objectively assessable factors. With the help of the research, the exciting questions could be answered as follows. What infrastructure investments have been made in the cities? What impact did the program series generate in these cities, what was the return on the projects implemented? How well have the events mobilized the local population and visiting tourists, and motivated those interested in cultural programs to visit the city?

Methodology: The study uses both secondary data and qualitative research methods (interviews) to highlight processes, parallels, trends, and conceptual design differences in the light of actual implementation.

Results: As the result of the research can be said that both hypotheses were confirmed. H1. Both dance performances examined in the study were successful in terms of concept - planning - implementation, and H2. The cultural concept of dance in Veszprém offered a much wider and more comprehensive program to the visitors, drawing on a wider range from the opportunities of the domestic and international dance palette than the previous dance-themed program of the ECoC in Pécs.

Conclusions: However, it can be established in relation to the evaluation of effectiveness, that a less successful implementation can never be said to be completely unsuccessful, because it contributes to the maintenance, transmission, and transmission of culture, which is essential for the survival of humanity.

Limitations and future research directions: lessons can be drawn at the conceptual, planning and management levels which, together with an economically viable and sustainable infrastructure, can bring about changes in the life of a city in terms of cultural integration and tourism.

Keywords: culture, dance arts, European Capital of Culture, Hungarian cities: Pécs, Veszprém

JEL Classification: R59, Z32



Examination of the Health Awareness of the Adult Population Living in Győr-Moson-Sopron County in the Context of Internal Migration within the Country

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Background and introduction: The population's morbidity and mortality data in Europe are among the worst. While the average lifespan has increased in recent years, the number of healthy life years expected at birth lags behind the European Union average by almost a decade. Another unfavorable phenomenon is the aging of the population.

Objective: What effects are prevalent regarding internal migration in Hungary, it analyzes the health components of the relocated population.

Methodology: The survey was conducted among the population aged 18 and over. Secondary data analysis of census data from 2001 to 2022, supplemented with questionnaire-based investigation regarding lifestyle factors.

Results: The health behavior of the population raised and living in the western region is more favorable than that of the settled population due to migration.

Conclusions: Self-care is present in a low proportion within the examined population. The morbidity data of the population migrating to the Western region are more unfavorable, their health behavior is less favorable compared to those raised here.

Limitations and future research directions: Extend the study to at least a thousand individuals

Keywords: population size, health behavior, migration

JEL Classification: I10, I12, I15, Y1

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Exploration of the Dynamics of Employee Retention in the Public and Private Sectors: Identification of Differences through a Holistic Approach

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Background and introduction: One of the major challenges in human resource management today is the effective implementation of organisational efforts to retain employees. However, research on the sector specifics of this issue based on a holistic approach to employee well-being is scarce in Hungary.

Objective: This research aims to explore the holistic relationship between employee retention in the public and private sectors. The research aims to identify, with the participation of employees, which factors in the two sectors have a significant impact on employees' affective commitment to the organisation and their turnover intention, and to identify differences between the two sectors. The research aims to contribute to a deeper understanding of the sectoral specificities of labour retention. As this area is less researched in Hungary, the research will make a significant contribution to the literature. The research also aims to provide organisational decision makers with practical results that they can use to develop more effective retention and attraction strategies.

Methodology: The research is based on an online survey of 196 public sector employees and 387 private sector employees. Data analysis and model building based on empirical data were carried out using PLS-SEM (partial least squares - structural equation modelling) with Smart-PLS software version 3.0. The methodology used included testing the consistency and discriminant validity of the measurement model and checking for multicollinearity. The structural model fit was tested using the Standardized Root Mean Square Residual (SRMR) index, which was found to be 0.072 in the public sector and 0.071 in the private sector, indicating a good model fit.

Results: Bootstrapping revealed 28 significant relationships between the latent variables for the public sector and 35 significant relationships for the private sector. In the public sector, affective commitment and satisfaction with supervision had a significant negative impact on the turnover intention, while in the competitive sector, satisfaction with promotion, pay, supervision, as well as normative and affective commitment of employees were identified as significant influencing factors. In the public sector, among the employee well-being factors examined, employees' affective commitment is significantly related to pay, organisational communication, nature of work, satisfaction with co-workers and employees' normative



commitment. Employees' affective commitment in the private sector is significantly influenced by pay, communication, nature of work, satisfaction with co-workers and normative commitment.

Conclusions: Based on the results of the research, it can be concluded that there is a significant difference between the turnover intention and organisational commitment of employees in the public and private sectors. In both sectors, satisfaction with pay, supervision, organisational communication, the nature of work and colleagues, and employees' normative commitment play a crucial role in employee retention. However, among the differences between the two sectors, it is important to note that in the private sector, satisfaction with promotion opportunities and benefits also play a role in retention. This leads to the conclusion that, in addition to the factors mentioned above, private sector managers need to ensure attractive and competitive career and benefit opportunities when implementing retention policies.

Limitations and future research directions: The present research is limited to exploring the sectoral characteristics of retention of public and private sector employees. A future research direction could be to extend the research to socio-demographic and other employment characteristics of employees.

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Keywords: employee retention, employee well-being, sectoral characteristics, affective commitment, turnover intention

JEL Classification: O15



Exploring Economic Vulnerabilities in USMCA Countries' Value Chains: A Network Analysis Approach

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Background and introduction: This research addresses the gap in studies on economic vulnerabilities within the value chains of the three USMCA countries the USA, Canada, and Mexico. With growing cross and within border disruptions, there is a critical need to understand the unique interdependencies that characterize these economies. This study relies on network analysis to explain these complex interactions and enhance regional economic resilience.

Objective: The main aim is to analyze the vulnerabilities within the value chains of the USA, Canada, and Mexico, using the network analysis framework. This includes answering the following research questions:

1. What are the key industries within the USMCA value chains that have high degrees of connectivity?
2. How does the removal of those identified central industries affect the network as a whole?

Methodology: This research utilizes the OECD's Inter-Country Input-Output (ICIO) tables to perform a network analysis on intermediate consumption. Gephi is used to visualize the networks and to calculate the centrality metrics. A "Disruption Analysis" is used to simulate the removal of vulnerable industries to evaluate impacts on network resilience and stability. The analysis is conducted on each country individually and on the connected regional network to uncover the unique interdependencies and vulnerabilities within and across the USMCA countries.

Results: Findings highlight key industries, like Wholesale and retail trade, as critical across all three countries. Differences in vulnerability levels were evident, with industries like financial services in Canada and Motor vehicles manufacturing in Mexico showing unique risks. Regional analysis shows that disruptions in major industries such as the US Wholesale and retail trade and Mexican Motor vehicles could lead to significant economic repercussions across borders.

Conclusions: The analysis reveals unique vulnerability profiles for each country. The central role of the USA in the regional network suggests that disruptions there could significantly impact the entire region. The study emphasizes the necessity for strategic cross-border cooperation to fortify economic resilience and stability across the USMCA countries.

Limitations and future research directions: The study is limited by the use of ICIO data, which is four years outdated, affecting the relevance of results. Moreover, the disruption analysis only removes first-tier



suppliers or customers if they become completely isolated. Future research can explore the cascading effects of disruptions on upstream and downstream industries to understand their broader impacts on the network.

Keywords: Network Analysis, IO Tables, ICIO, North America, Vulnerabilities, Disruption, Resilience

JEL Classification: D85; F15; O51

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Financial Sustainability of the da Vinci Robot Systems

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Background and introduction: Our paper on the da Vinci Robotic Systems is preceded by the material of a lecture presented in May 2024 at the conference "Sustainable Economy - Sustainable Society" of the University of Debrecen, in which the two authors of the current paper (Domonkos Tinka and Zsolt Szepesváry) described the processes of introduction and spread of robot-assisted surgery in the world, in Europe, including Central and Eastern Europe, and in Hungary. In the publication, the authors, both of whom are physicians, presented the medical specialties (typically urology, gynaecology and general surgery) in which the use of robot-assisted surgical methods is most widespread. However, the paper only touched on the overall cost level of robotic systems, noting that six of the eight surgical systems purchased in Hungary were purchased with EU grant funding. They also found that robot-assisted surgical procedures are considered to be more costly than open laparoscopic surgery, or laparoscopic surgery without the use of a robot, around the world, but their research did not address what would ensure the financial sustainability of robot-assisted surgery.

Objective: The purpose of this paper is to determine whether a procedure that is medically justified, significantly shortens recovery times and significantly increases surgical precision can be made financially sustainable, or even financially sustainable at all.

Methodology: The research methodology will be desk research, reviewing the results of publications in North America, Europe (including Central and Eastern Europe), Asia and Australia, and drawing conclusions on the financial sustainability of robot procurement in Hungary.

Results: The financial return on investment of robotic assisted surgical systems is generally expected to be assured by advances in technology and the uptake of robotic systems, which will allow the benefits of economies of scale to be exploited, and lower costs. An increase in the role of robotic technology in medical and vocational training, where training centres contribute to the cost of purchasing equipment. In this case, the use of robotic technology in patient care and education will rely on co-financing by training and education centres to ensure financial sustainability. Establishment of centre hospitals where specialists are specifically trained to perform robot-assisted surgery, i.e. efficient, rational distribution of technology between care sites.

Conclusions: Based on the results, our paper focuses on the exploitation and verification of cost benefits from slave effects, co-financing and care management.

Limitations and future research directions: In this article we do not address the differences in robot-assisted surgical applications by each medical profession, and we address the development of robot technology only to the extent that its impact on cost levels can be directly demonstrated.

Keywords: da Vinci Surgical systems, financial sustainability, precision surgery

JEL Classification: JEL O33

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Fundamental Prerequisites for Developing a Leader's Emotional Intelligence

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Background and introduction: A leader's emotional intelligence plays an important role in a project team. However, more than understanding personal and group target attitudes and having qualitative knowledge and experience in emotional intelligence development is required. The fundamental basis and initial condition for a leader's emotional intelligence level is his physical fitness, namely his health. The leader's physical condition can influence his decisions and, consequently, the results of the whole project team.

Objective: The article aims to identify the fundamental components of a leader's EI development, namely the wellbeing and physical components.

Methodology: The purpose of the review is to find recommendations on nutrition for leaders as a significant factor in maintaining their psycho-emotional state, in particular, the cognitive properties of the brain.

Results: The article shows the importance of a balanced diet, particularly one enriched with bioflavonoids, in the diet of a person with a heightened psycho-emotional state and (or) tension in the concentration of attention associated with making important, urgent decisions.).

Conclusions: The project team leader's decisions are significantly influenced by the basic conditions of caring for one's health, namely, sleep patterns, healthy eating and physical activity. A balanced diet and physical activity have a special place.

Limitations and future research directions: Funding for experimental research is a prerequisite for obtaining statistical evidence of the quantitative impact of physical health on effective team leader decision-making.

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Keywords: Physical Health, Wellbeing, Balanced Nutrition, Emotional Intelligence, Leader

JEL Classification: I31, O3



History and Modernity: What is Generation Z Looking for in Budapest's Spas?

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Background and introduction: The increasing involvement of Generation Z, referred to as the future generation, in tourism is shaping global tourism trends, which has an impact on the composition and development of domestic service offerings. Generation Z is particularly interested in health, physical and mental well-being and leisure activities combined with adventure. One form of this can be spas, thermal baths and beaches, offering active and passive relaxation. Budapest is one of the few capital cities in the world where, thanks to its favourable geographical location, spa culture has played a prominent role from Roman times through the Turkish era to the present day.

Objective: The main objective of the research is to assess the demand and supply trends of Budapest's spas for Generation Z. One of the pillars of the research is a complex analysis of the bathing habits of Generation Z in Budapest, with a special focus on motivation, factors influencing the decision, preferred services and willingness to spend. At the same time, the range of services offered to young people by the capital's baths will be reviewed.

Methodology: The study uses an online survey to reach a broad target group, taking advantage of the technological affinity and active online presence of Generation Z. The survey will provide accurate and up-to-date information on the bathing habits of Generation Z, including preferred spas, motivation and frequency of visits, services used, preference for different programmes and the strength of the factors that determine the bathing experience.

Results: As a result of the survey, Generation Z prefer to visit spas that offer the experience elements that meet the needs of today's age. For young people, Budapest's spas are not only an important place for relaxation but also for social experiences. The survey shows that in addition to basic services, night-time bathing and a variety of music and themed programmes are popular, offering modern experiences in a traditional spa environment. General characteristics of Generation Z are also reflected in their bathing habits, such as sustainability measures, active online presence, experience sharing and price sensitivity.

Conclusions: According to the survey, for Generation Z, visiting a spa is primarily a form of relaxation and entertainment, rather than a means to achieve a medical goal, which has a significant impact on the future development of the range of services offered by spas. In order to meet the needs of the next generation, spas are increasingly looking to offer customised, unique and innovative experiences that combine traditional spa and wellness elements with the possibilities offered by modern technology. Spas should strive to



embrace the dynamic use of technology and develop and improve their online presence (booking system, ticketing, social media presence), thus increasing the effectiveness of the spa and adapting to the needs of the younger generation.

Limitations and future research directions: The next steps of the research will be to increase the number of survey items and to carry out a complex analysis of the services offered to Generation Z in the capital's spas.

Keywords: Generation Z, bathing habits, Budapest bathing culture

JEL Classification: Z32



How does Tourism Compare to Remittances and Hotel Investment in Stimulating the Economy? A CGE Analysis of Fiji

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Background and introduction: Tourism, remittances, and hotel investment are crucial external sources of income for many small island developing states (SIDS) like Fiji. These injections stimulate economic activity and growth, but their relative impacts are not well understood, particularly for SIDS economies. Assessing and comparing the economy-wide effects of these external drivers is vital for informing policy decisions aimed at sustainable economic development.

Objective: This study aims to evaluate and compare the macroeconomic impacts of a \$FJ200 million increase in tourism expenditures, remittances, and hotel investment on the Fijian economy using a computable general equilibrium (CGE) model.

H₁: Tourism expenditures positively impacts the overall economy

H₂: Remittances positively impacts the overall economy

H₃: Hotel investment positively impacts the overall economy

H₄: The different types of injections will affect the economy in different ways

Methodology: The research employs a CGE model, which follows neoclassical economic theory of profit maximization and cost minimization. The model comprises a series of equations describing the behavior of economic agents across different markets, including firms' demand for inputs, household demands, government demands, and foreign trade.

The underlying data is derived from Fiji's 2011 Supply-Use Table, obtained from the Fiji Bureau of Statistics. This data has been updated to 2019 values. Simulations are performed using GAMS software to solve the model's supply and demand equations as optimization problems.

The simulations involve a \$FJ200 million increase in tourism expenditures, remittances and hotel investment.

Results: The simulations reveal that a \$FJ 200 million increase in tourism expenditures, remittances and hotel investment all have a positive impact on Fiji's GDP. Remittances have the largest impact of resident households' utility. Welfare increases by 8.7% as a result of this injection. This is to be expected as remittances are direct injections into household utility. A \$FJ 200 million hotel investment increased welfare by 6.6% and an equivalent injection of tourism expenditures results in a 2.4% increase in welfare.



Nevertheless, the transition mechanism of these three injections is different and therefore different sectors of the economy will benefit depending on the type of injection.

Conclusions: The findings highlight the significant role of tourism, remittances and hotel investment in driving economic growth in Fiji. However, the sectoral impacts depend on how these injections are distributed throughout the economy. Tourism expenditures impact labor more proportionately while hotel investment will affect returns to capital to a greater extent.

Limitations and future research directions: While the CGE model captures economy-wide interactions and resource constraints, it relies on certain assumptions and may not fully account for all real-world complexities. Future research could explore the impacts of these external drivers on specific sectors, income distribution, and environmental sustainability. Additionally, incorporating dynamic elements and accounting for potential Dutch disease effects in the tourism sector could provide further insights.

Keywords: CGE, Hotel investment, Remittances, Tourism

JEL Classification: C68, D58, F24, F35, Z32



How it Supposed to Be? Estimation of the Economic Impact of EU Trade Sanctions on Russian Economy

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Background and introduction: Since the annexation of Crimea in 2014, the European Union has continued to impose sanctions of varying depth and intensity against Russia. However, since the escalation of the Russia-Ukraine war in 2021, the Russian economy has come under great pressure from the EU, which has imposed sanctions on the Russian Federation in various forms. In recent years, there have been widespread claims that sanctions hurt the EU more than Russia itself.

Objective: The aim of the research is to test our hypothesis that sanctions are at least as harmful to the EU as they are to Russia. The economic impact of measures is assessed through gross value added. The novelty of the research is that trade sanctions are captured at the level of product groups and then transferred to a global input output table. This allows us to get a more accurate picture of exposure to each other from both sides.

Methodology: The methodology relies on partial hypothetical extraction of the global input-output tables provided by OECD. Trade sanctions are imposed on products categorized by HS code (source: Eurostat Comext) which can be matched with producing industries. Thus, in downstream direction the composition of trade by industries can be revealed. We assumed the same structure of intermediate and final use by each industry. The method is based on the partial removal of sanctioned products from the Russian export and import as well as the countermeasures on EU export and import trade with Russia. By assuming constant value-added ratio, the impact on GDP can be estimated by calculating the output differences by standard input-output tools.

Results: The findings reveal a surprising asymmetry. The EU's sanctions target a much larger portion of Russian imports (70%) compared to exports (21%). This is predicted to cause a nearly 2% decline in the Russian economy, while the impact on the EU is estimated to be less than 1%. However, the burden isn't evenly distributed. Eastern EU member states with close trade ties to Russia, like Lithuania, Latvia, and Estonia, are more exposed to the negative effects. Additionally, sectors like aviation, chemicals, petroleum refining, and metals in Russia are expected to experience the most significant decline due to the sanctions. In conclusion, while the sanctions are predicted to have a more significant negative impact on the Russian economy compared to the EU, specific sectors and eastern EU member states are likely to experience economic hardship due to the disruption of GVCs.

Conclusions: We must reject the hypothesis because the sanctions and the retaliations in themselves are not causing significant trouble in the European Union, while the impact on Russian economy is considerably higher. EU sanctions are strategically planned to hurt the EU's economy as little as possible. However, empirical results are somewhat different, however there is no evidence that the slowdown of the European

economy is due to the sanctions, but rather to other factors like inflation and the cautious consumer demand.

Limitations and future research directions: As all researches, our study also has its flaws. We have made strong assumptions on the constant product structure of intermediate and final use. Although due to data availability, this cannot be managed, simulations can be utilized to estimate the potentially possible impact of sanctions.

Keywords: Add about 3-5 keywords in alphabetic order.



How the Bankers Seize the Society: The Processus of the Bancarization and Financialization of the Society

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Background and introduction: After the financial crisis of 2008, the financialization of the society has become a more and more important question because the crisis showed that the significant part of the societies of the developed world have been exposed to the financial sector that could cause weighty material and moral damages on them. Due to these damages, the popular political ideas can become stronger and the populist parties can emerge and get in power.

Objective: Nevertheless, the financialization of the society is not really researched in the Hungarian economy studies. In order to get a deeper picture of the financialization of the society, we try to define what we can call financialization and we try to prove that the bancarization of the society is the precondition of the financialization process. Therefore, we must also define and describe the process of the bancarization of the society that is also not studied in Hungary very much. Because of lacking the necessary data and the development of the Hungarian financial sector does not have an organic way, thus we will look for the answers to our questions in the development of the French financial system.

We suppose that the bancarization process is the precondition of the financialization of the society because the banks open the way toward the financial markets to support a more sophisticated (but not always less risky) saving solutions (deposit, corporate and sovereign bond purchases, indirect connection to the stock market) for the member of the society. Meanwhile, due to the bank's passive-side risk transformation, their large and safe deposit structure and sophisticated credit solutions and the market competition, they increased the aggregated loans and decreased the credit rates that do make more available the (mortgage and consumer) credit for the most part of the society. Indeed, this whole process not just support the financialization of the society, but it accompanied by the development of the consumer society as well.

Finally, this analysis also gives us the opportunity to include the history of the French banking system into the Hungarian economy studies that also not studied in Hungary.

Methodology: First, we are using descriptive analysis of the historical sources (Banque de France's archives, laws etc.) and existing research about the French financial and banking system but for the analysis of the active and passive side of the French banking system's balance sheet, we are using the - well digitized - available data of the Banque de France on the long-term basis. From the asset side, we will examine and analyze how the mortgage and consumer credit and/or personal loan had become more and more popular in the different groups of the society and whether the banking system had involved in this kind of lending processes and popularized it.

From the passive side, we will examine how the banking system tried to “capture” the society with the banking saving services that means how the quantity and the amount of the deposit and the banking client



rate has increased and how the retail banking networks became denser during the examine period. Of course, in order to understand better the changes, we have to also examined whether the banking regulation support or not the process of the bancarization and the financialization of the society therefore we check the most important laws and other regulations.

Results: We will give an exact definition of what we can call the bancarization and financialization of the society and we would like to get a deeper picture how these processus happened in the history; how the different part of the society has involved more and more in these processes. We would like to establish the historical period of the bancarization and the financialization of the French society and we also try to describe how the connection between the banking system and the society developed in time. Finally, our research also give a picture how the banking system involved in the development of the consumer society.

Conclusions: In the last century, almost the whole part of the society has been integrated into the financial system through the banking system, which resulted in the exposition of most part of the society to the financial system. It means that the bancarization of the society is the precondition of the financialization of the society, mainly from the passive side of the banking system balance sheet.

Limitations and future research directions: Unfortunately, our study analyzes only the connection of the French society and French banking system, but we believe that it would be necessary to make the same analysis on the Hungarian society and its interaction (the bancarization process) with the banking system because we would get a more detailed comprehension about the financial habits of the Hungarian society.

Keywords: Household Saving, Borrowing, Debt, and Wealth, Europe: Pre-1913, Europe: 1913–, Sociology of Economics

JEL Classification: G51, N23, N24



How to Substitute Big Data with Smaller, but Quality Datasets in Various AI Developments

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Background and introduction: Currently, the development of a typical Artificial Intelligence (AI) system involves training on large amounts of data, for example, using lots of measured data to understand the characteristics of processes, leading to better decisions, which will give better results and lead to higher business benefits. Further progress is hampered by the fact that few companies are able to produce or further increase the amount of data used for training. Thus, outside the field of big internet companies, there are only few applications where there is a real opportunity to scale truly Big Data.

Objective: In this paper, we aim to develop a general proposal for data-centric AI processing of problems in one domain. We show how effective methods of model-centric practice can be applied to smaller but quality datasets.

Methodology: The next big breakthrough in AI could be the creation of algorithms that work well with smaller data sets. At the core of data-centric AI is the systematic collection and management of data (labelling, validation, cleaning, augmentation, etc.). In contrast, the model-centric approach is all about data being fixed and turned into models and algorithms. In the data-centric approach, where the quality of the data is far more important than the quantity, the big challenge is to develop standards. The smaller the data set, the more important it is to label it uniformly and accurately.

Results: If data-centric AI with the systematic collection and management of data (labelling, validation, cleaning, augmentation, etc.) can be done, it could lead to significant advances in specific problem areas, such as health sciences.

Conclusions: One of potential areas is supporting research for health science with AI-based developments. In particular, the wide range of diagnostic technologies can be of great help in detecting different symptoms (especially image information). Such methods are typically based on optical measurements, and the resulting data are processed by suitable AI algorithms, mainly for process automation. And here again, the problem can be seen that although we use a lot of diagnostic tools, both the technical conditions and the physiological data of the patients can change during examinations, so the databases become smaller and fragmented. At that point, well-established methods based on Big Data technologies will no longer provide satisfactory results.

Limitations and future research directions: A general methodological proposal is always only a guideline for developing good practice in a specific area. Based on the usual methods of collecting data in the space

occupied by the problem and the amount of data that can realistically be accumulated, a truly applicable methodology can then be formulated for other areas.

Keywords: Big Data, AI, data-centric, quality datasets

JEL Classification: O310



Hungarian Universities in University Sustainability Rankings

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Background and introduction: Research interest in sustainability has a history spanning several decades. From the outset, universities have played a crucial role as hubs for such research. Interest in universities as sustainable institutions and workplaces emerged significantly later.

Objective: Our review study focuses on sustainability rankings, specifically examining those that deal with universities as institutions and identify which Hungarian universities are included in these rankings. Our goal is to identify and highlight best practices.

Methodology: In our study, we reviewed three major university sustainability rankings (UI Green Metrics, THE Impact Ranking, QS Sustainability Ranking), focusing on participants from Hungary. The Green Metrics, which has the longest tradition, has consistently featured two Hungarian participants in its top 100 (University of Pécs, University of Szeged).

Results: The Green Metrics, which has the longest tradition, has consistently featured two Hungarian participants in its top 100 (University of Pécs, University of Szeged). Universities participating in these sustainability rankings are primarily not competitors in the field of sustainability, but rather they promote the dissemination of good practices through collaborative initiatives (e.g., MEFP).

Conclusions: All participants are featured in various sustainability rankings, with the initiating University of Pécs being one of the most successful Hungarian participants in these rankings. One outcome of the Platform is the development of an online course and associated materials facilitated by the faculty members of the participating universities.

Limitations and future research directions: When examining the relationship between universities and sustainability, it is important to distinguish between the two perspectives. In our research, we examined sustainability performance in the second interpretation (Sustainability Institution). Exploring the relationship between the two approaches is a topic for future research.

Keywords: Times Higher Education Impact Ranking, Green Metrics, QS Sustainability Ranking, HESI, MEFP

JEL Classification: I23, Q01

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Integration of New Technologies in Quality Management Systems

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Background and introduction: New technology has accelerated the development and improvement of quality management systems (QMS). Integrating digital tools into traditional quality management practices offers opportunities for continuous improvement and competitive advantage.

Objective: To explore how new technologies, particularly those associated with Industry 4.0, can be integrated into QMS to enhance efficiency and quality in both manufacturing and service sectors.

Methodology: This study employs a systematic literature review (SLR) to examine the impact of technologies such as robotics, artificial intelligence (AI), the Internet of Things (IoT), and digital twins on QMSs. It also reviews case studies and empirical data to illustrate practical applications and benefits in real-world scenarios. The databases and sources of information include IEEE Xplore, Scopus, and Google Scholar.

Results: Industry 4.0 technologies are revolutionizing manufacturing by enabling automation and ensuring processes stay within set tolerances. This transformation improves efficiency and competitiveness. Robotics and automated inspection systems can decrease human error, therefore contribute to improving product quality. AI and IoT sensors provide real-time monitoring, and together with predictive maintenance, this leads to reduced downtime and defects. Another new technology, digital twins help simulate production processes, identifying potential quality issues early on in the product or process design phases. Automation and digital tools can streamline service delivery and help ensure consistency and tailoring of services. Real-time data analysis and feedback allow personalized adjustments. All of the above can contribute to higher customer satisfaction and, eventually, customer loyalty. Automating repetitive tasks in quality management frees up resources for more valuable activities. Advanced communication tools enhance collaboration and ensure better compliance with quality standards. Predictive analytics allow for proactive quality management by identifying potential issues before they happen. Regarding quality management systems, the use of Industry 4.0 technologies significantly enhances their efficiency and effectiveness. Key technologies for modern QMS include SPC software, document management systems, risk management software, supplier quality management software, and enterprise quality management platforms. AI and machine learning play a key role in comprehensive process control, optimization and improvement.

Conclusions: Integrating advanced technologies into QMS can significantly improve productivity, efficiency, and quality, both in manufacturing and services. Organizations can streamline operations by



leveraging automation, AI, and advanced analytics. Advancements in quality can be turned into competitive advantages.

Limitations and future research directions: The study primarily relies on a literature review and case studies, which can capture some practical challenges of technology integration into traditional quality management. Future research could focus on empirical studies across various industries to validate the benefits and address the challenges of integrating new technologies into QMS. Additionally, exploring the impact of emerging technologies, such as blockchain, on QMS would be beneficial.

Keywords: Artificial Intelligence, Industry 4.0, Predictive Analytics, Quality Management Systems, Service Quality

JEL Classification: L15, O33



Integrity Potential in the Supply Chain – The Role of Compliance

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Background and introduction: Global supply chains are the cornerstone of modern economies. Their efficiency now goes beyond performance and economic results, and the need for transparent and ethical business practices has never been more in focus. Compliance with legal and ethical requirements is an essential means of ensuring the integrity that comes from operating in a compliant and transparent manner and is key to the sustainability and reliability of these chains.

Objective: To highlight the key factors influencing the regular and ethical operation of supply chains in a rapidly changing technological, economic, and regulatory environment and to raise awareness of the role of management in developing compliance systems and improving integrity.

Methodology: Based on relevant literature, the challenges of compliance in supply chains in the 21st century will be presented, and a method for measuring individual companies' integrity level will be used. This method can be used to identify differences in integrity between companies, which can help improve supply chain compliance.

Results: Varying legislation and differing approaches to compliance across countries pose significant challenges for companies in supply chains to work together. However, a well-functioning compliance system helps to identify and manage these risks, minimizing legal and financial consequences and protecting reputations. There is a growing trend that, in addition to performance and financial metrics, compliance is becoming a critical factor in investor decisions, requiring a different management approach than in the past. One of the biggest challenges in this process is globalization, which is making supply chains more complex and, therefore, more complicated from a compliance perspective due to the different degrees of integrity scores. In addition to the different legal and regulatory environments in different countries, the specific integrity approach of each industry further complicates the development and maintenance of standardized compliance procedures. Varying degrees of integrity potential also affect the compliance performance of the supply chain as a whole. Therefore, it is essential to assess the performance of supply chain actors in terms of compliance. Other factors include technological advances that challenge compliance, with data protection and cybersecurity becoming increasingly prominent as supply chains rely more and more on digital platforms and systems. Data leaks and cyber-attacks, for example, can cause serious reputational and financial damage, so companies need to continuously improve their security measures to ensure proper operation.

Conclusions: The need for supply chains to operate smoothly and efficiently is becoming increasingly important today, impacting investor decisions. However, the ability to operate supply chains is a critical



element of integrity, and it can vary across countries, industries, and companies. Taking integrity capabilities into account can contribute to the orderly functioning of supply chains, which impacts investor decisions through improved reputation.

Limitations and future research directions: Future research directions include comparing and analyzing compliance practices and challenges in different industries and regions.

Keywords: compliance, integrity, leadership, supply chain

JEL Classification: F23, G32, M14



Investigating the Cultural Intelligence Level of Two Small Informatics Companies and How it Affects their International Communication

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Background and introduction: In our globalised world intercultural competence or cultural intelligence is a very important skill. Measuring and developing it is indispensable to enterprises' better performance. In large multinational companies, intercultural management aspects are basic parts of company management and communication, but they are increasingly gaining ground in small and medium enterprises as well.

Objective: The present case study measures the cultural intelligence level of two small informatics companies and examines its impact on the effectiveness of their international communication.

Methodology: To measure the cultural intelligence level of the managers and employees, questionnaires were used and interviews were conducted with the companies' managers.

Results: The results of the managers and employees who are regularly in contact with their foreign partners showed they can communicate well on the cognitive level with people of different cultural background. However, they show uncertainty when required to draw on their physical and emotional cultural intelligence. Changing their communication style and dealing with people from a different culture proved to be especially problematic for them. The third problem we encountered was the lack of ability to adapt to the lifestyle, i.e. to the attitudes, values and world view of other cultures.

Most of the participants in the survey had problems with changing their body language when communicating with people from different cultures, with modifying their speech style, and their confidence level when dealing with people from a different culture. The interviews revealed that the difference between high- and low context communication and the language problems cause most of the conflicts with foreign partners. Low-context (British, German and Czech partners) and high-context (Hungarian, Turkish) communication styles differ significantly. On a different level, the differences in language skills also create communication problems.

Conclusions: The results indicate that the employees who frequently meet foreign partners would need to develop their physical and emotional cultural intelligence to be completely confident when working together with people from different cultural background.

Based on the results of the questionnaire and the interviews it is possible to conclude that for the employees who regularly communicate with foreign business partners, an all-round cultural intelligence and cultural sensitivity development training would be necessary, as this would increase the efficiency and effectiveness of these companies in terms of their international communication.

Limitations and future research directions: The size of the sample is rather small, the future research is planned to extend it to other small- and medium-size companies with international relations.

Keywords: cultural intelligence, intercultural competence, intercultural conflicts, interviews, small- and medium-size enterprises, survey

JEL Classification: M14



Key Characteristics and Role of Lead Users in Medical Device Innovations: An Exploratory Study

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Background and introduction: Successfully innovating firms involve lead users in their new product development (NPD) process. Identifying appropriate lead users poses a significant challenge due to the variation in individuals' contributions (Füller et al., 2012), caused by their diverse personal characteristics (Lettl, 2007).

In order to address the above research gap the following research questions are set:

RQ1: What lead user personal characteristics contribute to the success of a co-created NPD process?

RQ2: How comprehensively do lead users need to be involved into a co-created NPD process by considering their personal characteristics?

RQ3: How do lead users' engagement levels change during the co-created NDP process?

Objective: The study aims to contribute to how to select and engage appropriate lead users in order to avoid failed innovation, reduce development time and costs, accelerate time-to-market, and maximise profitability.

Methodology: Abductive reasoning was applied to eliminate the weaknesses of inductive and deductive reasoning. Systematic combining (Dubois et al., 2002) was applied through an iterative process involving theory and practice. A theoretical sampling of companies was applied to enable a clear pattern recognition of the focal phenomenon.

The interviews were conducted in three phases. In the first phase, the aim was to collect and analyse data from the interviewees, in the second round the objective was to verify the interpretations and set the impact of each identified lead users' characteristics at different stages of the co-created NPD, while in the third step the objective was to validate the results with lead users.

Results: The core findings of our study relate to the identified seven personal characteristics of lead users and their impact at various stages of the co-created NPD.

Conclusions: Our studies contribute to theory through the further development of the Lead User Method, which enables an appropriate selection of lead users for firms' co-created NDP.



The results contribute also to practice by identifying seven essential characteristic elements that lead users need to possess in order to make a positive impact on the success of a co-created NPD process.

Limitations and future research directions: Our study is subject to limitations that may impact the research findings. It is based on case study research and utilises a qualitative approach. We employed theoretical sampling, systematic combining, and abductive reasoning methodologies.

Further research might apply quantitative research methods and alternative approaches to confirm our findings. Investigating the engagement of multiple lead users in the co-created NDP opens new research opportunities to identify additional characteristic elements and examine the required engagement levels.

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JEL Classification: O31 Innovation and Invention: Processes and Incentives

Keywords: lead user engagement, co-created NPD, personal characteristics, medical device innovations



Literature Review on Ethical Leadership in Sports Management

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Background and introduction: Although several studies have been examining the effects of ethical leadership, there is little empirical evidence that focus on sports management and the influence moral leadership has on athletes. Coaches and management have an outstanding role in sport and also in athletes' lives. They engage in and guide athletes' life on a daily basis, therefore their influence can be crucial on them, especially when it comes to ethical guidance. The main focus of this study is to measure the connections (if there is any) between ethical leadership of the management and its outcomes on athletes in different domains. It is highly important to understand this connection, in order to implement the most effective leadership strategies to the sport management.

Objective: The objective of this literature review is to critically examine and synthesize existing research and literature on ethical leadership within the context of sports management. The aim is to get a deeper understanding of the influence of ethical leadership in sport management, based on existing literature.

Methodology: The research will identify, analyse and synthesise relevant existing literature on the topic of ethical leadership in sports management.

Expected results: It is expected that the literature review will offer a comprehensive conceptual framework of ethical leadership in relation to sports management.

Conclusions: The research will provide a comprehensive analysis of ethical leadership in sports management, we expect to see the influence moral leadership has on athletes based on current existing literature, as well as to highlight areas for future research related to this topic as well.

Limitations and future research directions: The main limitation we expect to face during the literature review is that unfortunately there hasn't been a lot of research conducted on the topic recently, therefore we may rely on older literature to analyse ethical leadership in sports management. Future research could employ longitudinal studies and cross-cultural comparisons, in order to further explore the effects of ethical leadership in sports management and the influence it has on athletes.

Keywords: ethical leadership, sports management, moral leadership

JEL Classification: Z2



Math is the Access Ticket to the Managerial Level

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Background and introduction: In a fast-paced industrial/business environment, managers must make more and more decisions in less and less time. The key to success is the organizational process, the information, the tools used to process and evaluate it and, finally, the employee levels involved.

Objective: A decisive condition for the success of decisions is whether the issue behind the decision has been properly defined, identified, and structured at the level of the decision-maker. In many cases, decisions - especially in a corporate context - are accompanied by information and quantification in some form or other, represented by figures. And when we talk about numbers and quantification, it is essential not to talk about mathematics, mathematical competences, and mathematical literacy.

Methodology: Mathematics, mathematical thinking, has always had a decisive significance in the history of science as the embodiment of rationality and logical thinking. It is also a strong, positive call to action in the context of our decisions. It is the mathematical knowledge used in the preparation of management decisions, behind economic analyses, behind data analysis or artificial intelligence. Therefore, the relationship between cognitive mathematical skills and problem-solving and decision-making skills is important for the relationship between the skills of each level of decision maker.

Results In our exploratory research, we investigated the mathematical competences of middle and senior managers in a sample of 505 individuals. In this research, relevant mathematical competences in relation to the professions are defined as those acquired during higher education and during the acquisition of an academic degree in mathematics.

Conclusions: The aim of the research was to find out whether those who are more successful in mathematics are more likely to become middle or senior managers. Furthermore, the mathematical skills of senior and middle managers were compared.

Keywords: mathematical competences; leadership; decision making; success; corporate management



Motivations and Determinants of Financial and Insurance Awareness Among University Students

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Background and introduction: There are multiple dimensions of inequalities and discrepancies in financial literacy and awareness. This paper builds on two of these, which have been given different roles in our work. The first dimension provides a broad framework for analysis. It shows that Hungary is in an average position in terms of financial literacy in international surveys (EC 2023, OECD 2023), but 'underperforms' compared to this position in terms of the use of financial and insurance services (Deuflhard et al. 2019; Kaiser et al. 2022). The other dimension under study is internal social inequalities in awareness and action, which are determined by factors other than income (Csorba 2020; Szóka 2021). In the context of a larger-scale study of the domestic insurance market, one of our research directions focused on the demand side. We considered it important to explore the structure of the factors influencing the decision mechanisms and strategies that underpin the decisions and strategies related to insurance and, more broadly, personal finance. Our work in this area focuses on young age groups, specifically students in higher education.

Objective: Among the factors differentiating financial and insurance awareness and action, we identified family socialization (Gudmunson – Danes 2011), the relevant activities of the education system (Hastings et al. 2013) and, in particular, the use of technology as the most important for the age group under study (Turner 2015; Edwy et al. 2022). The aim of our study is to explore the effects and relationships between the main potential factors perceived (socialization effects, educational effects, habits of technology usage), thus based on data from a questionnaire survey, we seek to answer the following broadly defined research questions:

To what extent do family socialization patterns determine the basis for students' expected independent financial and insurance decisions?

Do the different degrees of autonomy of the respondents have an impact on their financial behaviour?

What role can digital technology play in shaping the financial and insurance activity of Generation Z?

Methodology: The paper relies on the analysis of the data of a quantitative data collection (questionnaire survey). The questionnaire was administered online among the students of the István Széchenyi University,



and the number of cases that can be used for the analysis is 748. The analysis examines the above-mentioned research questions through explanatory techniques on the relationships between personal factors (socio-economic status, household financial knowledge and action), current environment of the respondents (relationship to work, income and expenditure structure, level of independence) and relevant attitudes (insurance activity, technological expectations).

Results: The study describes a model that can be used to determine to a certain extent the 'life paths' that draw different motivations for risk-taking and financial action among young people.

Conclusion: The factors that determine the financial and insurance awareness of the young generation, as well as the decisions based on them, can be examined and shaped to different degrees. Getting to know the structures of the factors influencing each other is useful in terms of both increasing awareness and improving the communication of insurance market players aimed at the young generation.

Limitations and future research directions: The present analysis has certain limitations and can be considered primarily as a pilot study, since on the one hand, a specific group within an age group (university students) were the subjects of the primary study, and on the other hand, we relied on data collected among the students of a specific institution. As a result, moving forward and expanding the investigation can take two directions. On the one hand, it can move towards a wider range of domestic higher education institutions, and on the other hand, it can broaden the focus in the direction of strata of the examined age group in other life situations.

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Keywords: financial awareness, insurance decisions, Z generation, digital technologies

JEL Classification: G41, G52, G53, Z13

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Navigator – Your Life. Your Way.

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Background and introduction: One of the most significant new projects at Corvinus University of Budapest in recent years has been the launch of Navigator, our digital data-driven career and life path planning platform, which allows students to plan their career during and after their university years. After completing a short personality test, their academic achievements and other extra-curricular activities complete their profile. The life path planner is integrated with a 3-step mentoring programme designed to assist students in navigating the myriad opportunities available at the university.

Objective: The presentation will describe the background, the experiences of the implementation and the first 2 pilot years of Navigator and possible ways forward.

Methodology: The employed methodology is a qualitative research approach, specifically utilizing case study analysis.

Results: Navigator is a uniquely developed educational invention in Hungary, currently available to more than 5,000 students at Corvinus, providing opportunity for personalized support for all our undergraduates. In this case study, we present the results of the ongoing system development, which encompasses the introduction of a permanent mentor programme, the integration of partial training modules and the implementation of a novel student enrichment program.

Conclusions: Experience shows that Navigator has made it much easier for our students to plan their university career since the launch of the programme. The results of the personality test combined with the digital life path planner and the 3-step mentoring programme including profile interpretation consulting, orientation consultation and CV counselling provide students with a 360° view about themselves.

Limitations and future research directions: The programme is currently offered exclusively to undergraduate students, with future plans to extend its availability to all other academic levels (master's, PhD, MBA, etc.). The ongoing activities at the university necessitate continuous system development and adaptation to emerging challenges. A significant future direction involves the exploration of additional synergies.

Acknowledgement: Navigator was shortlisted (selected as one of the top 30% of participating projects) in the 2023 QS Reimagine Education Awards, in the category Developing Emerging Skills and Competencies – Early Stage.

Keywords: career planning, faculty mentoring, higher education, navigator, online platform

JEL Classification: A20



Once More: Can Private Health Insurance Buy Happiness? Evidence from Romanian People

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Background and introduction: In Romania, one of the developing European countries, private insurance is not yet fully utilized to its potential. This paper enhances the theoretical and empirical literature on the topic.

Objective: Our study examines the predictors influencing the level of Romanian happiness in the context of private health insurance.

Methodology: Using a sample of 385 individuals and a Structural Equation Modeling model, we evaluate the impact of private health insurance (PHI), level of income and knowledge, and the other control variables on the level of well-being.

Results: Our empirical findings reveal that people with private health insurance are generally happier compared to those who do not have insurance. Income and level of knowledge play an essential role.

Conclusions: A positive correlation between private health insurance and happiness emphasizes the need to enhance our quality of life, even in the commercial sense of expression, even when we cannot purchase our health. Safety tends to make Romanians happier. Hence, it's time to spend more on our health (purchasing PHI). Private health insurance coverage that makes it easier to access better physical health also makes one feel more comfortable, which improves mental health.

Limitations and future research directions: Though it has advantages, our research has certain general limits. First, the subjectiveness level is raised in our study by using self-reports to evaluate some of the factors. Secondly, our findings could be somewhat applicable to other civilizations worldwide. Future study suggests including respondents worldwide.

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Keywords: happiness, health insurance, healthy life, life satisfaction

JEL Classification: G22



Out of Comfort Zone: The Uncertainty Energy Flow and How It Is Managed by Insurers

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Background and introduction: The issue of energy dependency is becoming increasingly prominent in both domestic and international insurance markets. The energy sector, in particular electricity and gas supply, is a fundamental factor on which modern industries and global supply chains rely. Any disruption in this area poses significant risks that the insurance market must manage.

The energy dependency of different industries varies, but almost all sectors depend on energy supply in some way. In the industrial sector, particularly in heavy industry and manufacturing, energy supply is critical. The automotive, steel and chemical industries are particularly sensitive to energy constraints, as a significant part of production in these sectors consists of energy-intensive processes. Operations in the service sector, including financial services and information technology, are also highly dependent on stable energy supplies, as data centers and digital infrastructure are essential for the continued operation of the business.

Objective: Global supply chains are closely intertwined with energy markets. Energy crises, such as disruptions to electricity or gas supplies, can have a significant impact on these chains. Disruptions in energy supply can quickly spill over, causing delays in manufacturing, transport and logistics. This is particularly true for industries that are heavily dependent on timely delivery, such as automotive and electronics manufacturing. In global markets, this can lead to extensive supply chain disruptions that insurers need to build into their risk models and risk management strategies.

Methodology: Our research provides a comprehensive overview of energy risks and their management, as well as the emergence of energy dependency in different industries and its impact on global supply chains. Industry analysis, strategic recommendations and the latest research findings will help to better understand and manage energy-related risks.

Keywords: energy; risk; uncertainty; sustainability; corporate management



Risk Awareness and Insurance Literacy Among Hungarian Youth - A Conceptual Approach

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Background and introduction: Since 2008, the global financial crisis, it has become increasingly important for governments and financial actors to improve the financial awareness of the public and to increase it through educational programmes. In our research, we investigated the evolution of Hungarian young people's (14-29 years old) attitudes towards financial and insurance matters over the past two decades through available Hungarian and international financial literacy and insurance literacy surveys, the Youth Survey and our own focus group survey of university students in 2023.

Objective: The main goal of our work was to conceptualise all the factors that can effect the insurance literacy and risk awareness of the young Hungarian population and to test these effects on university students using the focus group approach.

Methodology: Literature review of Hungarian and international papers on insurance literacy, secondary analysis of existing surveys, and a qualitative test of the conceptualised variable-groups with focus groups.

Results: A modified and tested conceptualised model of insurance literacy and risk awareness. The difference between the Hungarian and the international customers.

Conclusions: The Hungarian risk awareness and insurance literacy is in its rudimentary state especially among the young generations of the country. The available international conceptual models had to be revised and shortened.

Limitations and future research directions: This study was the starting point of a large scale online survey and served as a test for the main question-groups of the next qualitative phase of the project.

Keywords: insurance, risk taking, students, financial awareness

JEL Classification: G52, G53

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Some Thoughts on the Applicability of Emotional and Cultural Intelligence (EQ and CQ) in Intercultural Studies

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Background and introduction: During the past decades we observe a growing number of empiric survey and scholarly research with regard to the field of intercultural studies. The results of these considerably contribute to the theoretical framing and practical applications of the discipline – providing a better understanding of its significance.

Objective: The shift from intercultural to multicultural interface has triggered new challenges in handling interactions in organizations and communities in all domains of life. It is not enough any more to be interculturally competent versus one particular culture as opposed to yours. Instead, in terms of professional communication, in order to handle multicultural settings other skills, approaches and competencies are to be mobilized. This contribution elaborates the relation of culture and communication with the use of these new approaches.

Methodology: In human interactions new dimensions of approach have surfaced by the introduction of some new concepts like Emotional Intelligence (EQ) and Cultural Intelligence (CQ). The study relies mainly on works of Goleman (1995) and Bradburry (2009) for emotional intelligence (EQ) and on works of Early & Ang (2003), Livermore (2010), Thomas – Inkson (2011) and of Meyer (2014) for cultural intelligence (CQ).

Results: The contribution gives a detailed introduction and description of the concepts, contents and functions of Emotional Intelligence and Cultural Intelligence, to their application and implementation in diverse domains within business environment and in professional communication. As for illustration some case studies from the international arena and from multicultural professional settings will be demonstrated.

Limitations and future research directions: Apart from EQ and CQ under discussion, other competencies like SQ (Spiritual Intelligence) and PS (Physical Intelligence) and their implementation in professional environment might also have been of interest. Their complementary function is to be investigated in further studies.

Keywords: intercultural competence, mental programming, multiculturalism, emotional intelligence, cultural intelligence

JEL Classification: A1, D91, F23

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Stakeholders' Engagement in the Smart City Development Process

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Background and introduction: Stakeholder engagement is a critical component in the development of smart cities, as it facilitates collaboration among various entities, including government agencies, private sector organizations, and the community. Recent literature emphasizes the necessity of involving diverse stakeholders to ensure that smart city initiatives align with the needs and expectations of the populace, thereby enhancing the overall effectiveness and sustainability of these projects. In conclusion, the literature on stakeholder engagement in smart city development highlights its multifaceted nature, emphasizing the importance of collaboration, inclusivity, and responsiveness to community needs. As cities continue to evolve into smart environments, the integration of diverse stakeholder perspectives will be vital for achieving sustainable and effective urban governance.

Objective: As a pilot study, the primary objective was to examine the factor structure of the Stakeholders' Engagement in the Smart City Development Process (SESCDP) scale. The intent was to validate the factor model, allowing for its application in future analyses, either through cross-validation or generalization to broader contexts.

Methodology: In 2021, researchers carried out a preliminary survey utilizing both CATI (Computer-Assisted Telephone Interviewing) and CAWI (Computer-Assisted Web Interviewing) methods on a random sample consisting of 225 citizens and 120 companies from Szczecin, a regional capital in the West Pomeranian region of Poland. The study primarily employed a quantitative approach, complemented by the use of descriptive statistics and Confirmatory Factor Analysis (CFA) for data interpretation and validation.

Results: Cronbach's Alpha was calculated to evaluate the internal consistency of the Stakeholders' Engagement in the Smart City Development Process (SESCDP) scale, which comprised three items: the engagement of public institutions, local businesses, and the citizens in Smart City development. The analysis indicated a high level of reliability among the three items. Additionally, a Confirmatory Factor Analysis (CFA) was performed to investigate the factor structure of the SESCO scale. The results of the CFA supported a unidimensional structure, further confirming the scale's reliability in measuring stakeholders' engagement in Smart City development.



Conclusions: This pilot study successfully confirmed the reliability of the Stakeholders' Engagement in the Smart City Development Process (SESCDP) scale in measuring stakeholder engagement in smart city development. The scale's unidimensional structure was validated, making it a useful tool for assessing the role of public institutions, businesses, and citizens in such projects.

Limitations and future research directions: However, the study had some limitations, primarily the small sample size and the focus on just one city, which may limit the broader applicability of the findings. Future research should expand to larger, more diverse populations to cross-validate the scale and gather deeper insights into the varying perspectives of different stakeholder groups. More qualitative research could also help in better understanding the nuances of stakeholder engagement.

Acknowledgement: The project is co-financed by the Minister of Science under the “Regional Excellence Initiative”.

Keywords: Engagement, Smart City, Smart City Development Process, Stakeholder

JEL Classification: O30, M31, R11

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Sustainability by Blockchain in the Pharmaceutical Supply Chains: A Systematic Literature Review

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Background and introduction: The pharmaceutical supply chain is a complex process involving various organizations, including logistics and marketing companies beyond the classic actors i.e. suppliers, manufacturers, wholesalers, retailers. Drug shortages, financial constraints, and affordability of pricing influence the sustainable operation. The use of supply chain management methods can enhance inventory visibility, support coordination, enabling quick inventory replenishment. Application of agile supply chain management strategies and tools can also improve the adaptability and flexibility of pharmaceutical supply chains through which sustainable operation can partly be ensured. Those technologies are the most valuable can be applicable along the entire supply chain ensuring visibility for every player's every product through automatized product identification and real-time, secured data communication. Blockchain technology can perform these expectations and ensure visibility, traceability, efficiency and sustainability in the pharmaceutical supply chain, enabling proactive decision-making by the actors resulted in lower demands for resources, less environmental impact, trustful operation and time saving supply chains.

Objective: The purpose of this review is to analyze how the integration of blockchain technology enhances supply chain sustainability in the pharmaceutical sector, with a focus on mitigating challenges such as counterfeit medications, supply chain disruptions, too long supply chains and environmental impacts.

Methodology: This research adopted a systematic literature review (SLR) methodology to critically analyze sustainable practices in pharmaceutical industry. Through case studies it also investigates the implementation of blockchain in pharmaceutical supply chain management methodologies to synthesize key lessons, benefits, and best practices. An SLR entails a series of techniques to minimize bias and error, improve the clarity of scholarly communication, increase internal validity, and create transparency through an auditable process. The technique consisted of five review steps aimed at enhancing the validity and quality of the systematic literature review (SLR) findings: The process has five main steps: (1) formulating questions, (2) discovering articles, (3) choosing and assessing articles, (4) analysing articles and combining findings, and (5) reporting the results.

Results: The literature review emphasizes the complex challenges encountered by the pharmaceutical supply chain and underscores the need for comprehensive strategies and innovative solutions to enhance the resilience of the supply chain, guarantee the safety of medications, and maintain transparency, enhancing distribution and logistics procedures to minimize emissions associated with transportation,

decrease fuel use, and alleviate delays in the supply chain and integrity through the use of blockchain technologies.

Conclusions: Blockchain technology can improve transparency in the pharmaceutical supply chain, reducing counterfeit drugs, interruptions, and data integrity concerns. Smart contracts enable automatic transactions, ensuring traceability and efficiency. Despite challenges like interoperability, regulatory compliance, and privacy concerns, blockchain's potential benefits ensure public health protection and re-establish confidence in the healthcare system.

Limitations and future research directions: The conclusions of a thorough literature review rely on the documented implementations that are accessible throughout the search period in scientific data bases, rather than on direct case assessments.

Acknowledgements: Ghana scholarship secretariate for its support in carrying out this paper.

Keywords: Pharmaceutical Supply Chain, Blockchain, Sustainability, Systematic Literature Review

JEL Classification: O32



Team Efficacy and Communication Satisfaction as a Driver of Commitment Among University Entrepreneurship Programme Participants

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Background and introduction: This research explores how perceived team efficacy and communication satisfaction within student teams influences team members' commitment and willingness to continue in the context of university entrepreneurship programmes.

Objective: Most entrepreneurial initiatives are not the result of individual efforts, rather of teamwork (Visintin & Pittino, 2014). An entrepreneurial team typically consists of two or more people working together to implement a new business idea, participate in its subsequent management and share ownership. The critical success factor in the start-up process lies in the characteristics of the founding team, or "New Venture Team" (Klotz et al., 2014). For employees in the corporate sector, the connection between team and commitment has been widely researched and explored (Chai et al., 2017; Neiningner et al., 2010; Wombacher & Felfe, 2017). In contrast, very few insights available of impact of nascent entrepreneurial team on commitment. This study addresses to contribute to filling this research gap.

Methodology: The research is based on the results of a quantitative survey among participating students of HSUP (Hungarian Startup University Program) in Hungary which program is available at all major Hungarian universities. The applied SEM modelling method provided an adequate instrument (Hair, 2010) to better understand the impact of perceived team attributes on value and exchange-based commitment and to identifying some determinants of these variables.

Results: The results suggests that team communication and efficacy are influential from perspective of commitment and willingness to continue.

Conclusions: This research provides empirical evidence that the project and profession focus that has been used to frame commitment in the case of nascent student entrepreneurs needs to be complemented with a team lens. In addition to professional competences (e.g. market research methods, business model building, MVP creation), the mentoring process should also encompass the strengthening of effective communication and team efficacy within the entrepreneurial group. These elements have a strong impact on the commitment of group members, which is an influential factor on the willingness to continue at the individual level.

Limitations and future research directions: The results suggest that further research is needed on mentoring activities linked to university entrepreneurship programmes. Qualitative studies should be conducted to determine the emphasis (if any) of mentoring on supporting teamwork and communication within the team.

Keywords: entrepreneurial commitment, student entrepreneurship, entrepreneurial education, student team, team efficacy

JEL Classification: L26, M13, A20

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The Geography of the Industrial Sector in Central and Eastern Europe and the Western Balkans

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Background and introduction: Over the past three decades, the region has undergone significant changes that have transformed the social, economic and political landscape. The traces of these changes are particularly visible in the post-socialist states of Central and Eastern Europe. For example, following the dissolution of Yugoslavia in 1991, the region faced challenges such as de-industrialization and hyperinflation, necessitating industrial restructuring. In recent decades, countries like Hungary have reintegrated into the global economy through a process of reindustrialization, driven by strategic planning and foreign investments. EU programs have played a vital role in fostering human resources in Western Balkan countries, enhancing skills essential for economic growth. This rich history highlights the dynamic industrial and economic transformations that continue to shape the region's landscape.

Objective:

- Q1. How does the industrial structure appear in terms of region?
- Q2. How has the spatial structure of industry changed?
- Q3. Were the reindustrialization processes in different industrial sectors spatially divergent?
- Q4. How is the spatial concentration of mutually supporting activities realized?

Methodology: The Orbis Europe database is a comprehensive source of financial and ownership information for European firms, both publicly traded and privately held. This database provides high-quality accounting data and has been widely used in various studies (Bajgar et al., 2020; Cerpentier et al., 2021). The database covers a vast number of companies worldwide, with data on over 130 million firms. Researchers have utilized Orbis to extract information on productivity, profitability, and firm performance, and it has also been employed to analyze the impact of product market regulations on allocative efficiency and business dynamics (Egyed & Zsibók, 2022; Tenucci & Supino, 2019). The coverage of European firms in Orbis is considered unrivaled by other databases. However, there are concerns about the database's coverage and representativeness, as it may not perfectly overlap with country-specific databases, which contain more complete firm-level information. Despite these concerns, Orbis remains a valuable resource for conducting firm-level analysis.

In this research, data from the Orbis Europe database were used. As criteria for choosing the enterprises examined, we used legal form, operating revenue, and country, utilizing the conditions shown in Table 1.



Table 1. Search steps and conditions (by Orbis Europe)

Search steps		Conditions
1	Status	Active
2	Standardized legal form	Public limited company, Private limited company, Partnership, Branch, Foreign company, Public authority
3	Operating revenue (Turnover), using estimates (th USD) ¹	Last available year, exclusion of companies with no recent financial data and Public authorities/States/Governments
4	Number of employees, using estimates	min=10, Last available year, exclusion of companies with no recent financial data and Public authorities/States/Governments
5	World region/Country/Region in country	Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Kosovo, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia

In addition to descriptive statistical tools, the methodology builds on complex indicators to measure correlation and concentration.

Results: The results of the study can show how the industrial structure of the region has changed, whether there are spatial/local concentrations within each industrial activity, and if so, whether these are atypical or typical processes.

Conclusions: Achieving regional economic growth is an arduous and time-consuming endeavor that necessitates a long-term strategy that is consciously based on local resources. In many cases, chance plays a significant role, and the competitiveness of numerous regions is attributable to the state's past activities during periods of de-centralization. State-owned or state-influenced industries often hold a pivotal position.

Limitations and future research directions: The Orbis database also has certain limitations. The inclusion of firms in the screening process depends on the regulatory environment of the country in question. Moreover, the database is complicated by the issues of "headquarters" and "establish-ment." In this study, the head office has been taken into account. However, from a methodological standpoint, this approach may differ within countries but not between them.

It is essential to note that this diversified picture is significantly affected by the Modifiable Areal Unit Problem (MAUP); thus, the research has concentrated on NUTS3 territorial divisions. The novelty of the research lies in the data; the Orbis data-base allowed for a thematic analysis of the companies.

¹ The following rephrased statement employs a formal tone while discussing the turnover figures for the period of 2016-2021. Although the inclusion of active enterprises was a primary screening criterion, it was observed that the turnover data for some enterprises was incomplete for the final year within this timeframe. To address this issue, an imputation method was implemented, whereby missing data for the final year was supplemented with the closest available data from the preceding years.



Future planned research will concentrate on temporality; how the actual turnover of a company has changed since 2016, and on modifications by activity. In addition, the exploration of general spatial characteristics provides a starting point for the exploration and analysis of the finer, deeper connections between sectoral structure and spatial structure.

Keywords: companies; industry, manufacture; Central and Eastern Europe, Western Balkans, Orbis Europe database

JEL Classification: R11, R12

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The Impact of Artificial Intelligence on Labour Market – Evidence from Hungary

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Background and introduction: Recent scholarly discourse has centered on the prospective impacts of Artificial Intelligence (AI) on the labor market and economic growth. The continual advancements in AI research herald the potential for heightened productivity and the creation of new employment opportunities. However, some experts express concerns regarding possible job displacement and the exacerbation of socioeconomic inequalities. For instance, a Goldman Sachs report from early 2023 posited that although generative AI has the capacity to generate new jobs and enhance global productivity, it could also precipitate significant labor market disruptions, potentially affecting 300 million jobs through automation. Similarly, British Telecom announced plans to reduce its workforce by up to 55,000 positions by 2030, with the possibility of replacing 10,000 of these roles with AI technology.

Objective: In this study, I compare and contrast, among other things, data from the US on the number of people employed in the respective jobs, analysed as a proportion of the total time spent on all tasks automated and augmented by Generative AI language models.

Methodology: My analysis is based on the premise that digital technologies such as artificial intelligence, robotics, sensors and the Internet of Things are becoming more widespread in industry and services sectors and are the focus of increasing global reporting and data collection. The aim of my research is to examine the outlook for Hungary's labour market in terms of job composition. To this end, I will review trends in the literature, highlight data relevant to Hungary and analyse them in an international comparison. The analyses are mainly based on a descriptive statistical methodology.

Results: Hungarian employment has shown a slight increase in recent years, which can be seen in both the industrial and service sectors. Results include occupations where employment has increased in occupations that are highly exposed to AI and make extensive use of computers, suggesting that in these occupations AI and labour are complementary.

Conclusions: Thanks, among other things, to the investments in the national economy and the focus of FDI coming to the country, there is an increase in employment in the industrial sector, where there is a more intense risk of automation, but here too there are tasks that require a higher level of knowledge, advanced technological solutions (for example, artificial intelligence) are effective for its application. Knowing the processes and trends described in the study, companies must prepare more consciously for the retraining and further training of employees.

Limitations and future research directions: The analysis is primarily concerned with highlighting a relatively small country, for which data may not be available in sufficient detail, and the scientific feasibility

of examining AI in the labour market is limited. In addition, to detect a significant shift at national level, longer time series data analysis is needed.

Keywords: Artificial Intelligence, Hungary, labour market

JEL Classification: J01, J24



The New Tourist Attraction of Tokaj-Hegyalja, Europe's Longest Cable Bridge

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Background and introduction: The Bridge of National Unity was built as an integral part of a historical thematic route in Tokaj-Hegyalja, which facilitates access to the attractions of the thematic route. The cable-stayed bridge, completed in 2024, is 700 meters long and 85 meters high, and is currently the longest cable-stayed bridge in Europe. Nowadays, the bridge has become a tourist attraction.

Objective: The aim of the research is to prove that a cable bridge built to shorten a route can be a tourist attraction in itself. The Asian and European samples obtained from the international literature did not clearly support this. The results of the evaluation of the questionnaires filled out by tourists on the bridge built in Tokaj-Hegyalja prove that it is considered a tourist attraction. The uniqueness of the bridge and the tourist experience gained during the crossing prove that it provides observational opportunities to get to know the form of the "Tented Mountains" that cannot be seen from the valley route.

Methodology: We examined the bridges built with similar technology from a functional point of view, and then made a comparison with the Tokaj-Hegyaljai bridge. Evaluating the results of the field visit and the in-depth interviews, the results obtained during the primary research strengthened the hypothesis that a bridge built with traffic functional planning is actually a real tourist attraction for Sátoraljaújhely.

Results: The results of the research show that the Tokaj-Hegyalja suspension bridge is a unique national attraction. Crossing the bridge, the guests will see the ruins of the Sátoraljaújhely castle and consider it a tourist asset that will make them return to the city. Based on the research, it can be said that the bridge fulfills its function, as it is present in the tourist offer of the city as a thematic promenade. It combines the elements of cultural and active tourism, as guests can take a cable car from the Zemplén Adventure Park on Magas-hegy to the Szár-hegy, where they can see the Trianon monument and the stations of the Hungarian Calvary. Continuing on the suspension bridge, tourists will encounter the experience elements of the former Újhely castle, which has been reconstructed and stylized with metal elements.

Conclusions: The research confirmed that Tokaj-Hegyalja has been enriched with a unique attraction of national importance. The infrastructure of the thematic route should be further developed with the installation of multilingual information boards and facilities to meet human needs. Guest satisfaction can be increased by introducing minibuses that can provide access to parking lots and local transport.

Limitations and future research directions: Another control research is required by 2025.

Keywords: Tokaj-Hegyalja, Bridge, Tourist attraction



The Profit, the Community or the Mission? What Drives Collaboration Between For-profit and Social Enterprises?

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Background and introduction: By having their mission to address social and environmental problems, Social enterprises are often at the forefront of innovation, fostering sustainability and economic inclusion, engaging with local communities, and providing employment opportunities.

We base our study on social identity theory (SIT), which explains the basis of identification of a person's sense of self that forms this person's beliefs, values, and behaviours in the social context. In entrepreneurship, the SIT may help explain the willingness to engage in certain actions, particularly the willingness to collaborate between social enterprises and for-profit entities. In our study, we draw on Fauchart and Gruber's (2011) work, which argues for distinctive social identities of Darwinians, Communitarians, and Missionaries. The extant literature (e.g., Vallaster et al. 2023) finds that social identity drives the approach to business relationships. At the same time, studies on social enterprise motives for collaboration in the context of social identity are rare. We add to the existing literature by applying Sieger et al.'s (2016) scale to measure the entrepreneur's social identity and investigate the relationship between willingness to collaborate.

Objective: The paper aims to identify the antecedents of the willingness to collaborate between for-profit enterprises and social enterprises. In particular, we investigate whether the manager's social identity draws upon social identity theory (Darwinian, Communitarian, or Missionary) and has explanatory power over collaboration behaviour.

Methodology: The online survey was carried out among enterprises in Austria, Croatia, the Czech Republic, Germany, Hungary, Italy, Poland, Slovakia, and Slovenia during 2020, and we got 673 answers after the cleaning process.

The paper used exploratory and confirmatory factor analysis methods. Initially, the Principal Component Analysis was employed to identify the common factors. Then, the factors extracted were analyzed using varimax rotation (as a check, other orthogonal rotations were also applied). The extracted factor scores were the input into the logit regression to determine the influence of latent constructs on the probability of cooperation between altrupreneurs and social enterprises. The results were confirmed by applying the SEM-PLS method.

Results: The study confirmed that the behavior of social entrepreneurs and altru-preneurs could be analysed within the Social Identity Theory framework. Three main types of attitudes described by Fauchart and Gruber (2011) and Sieger et al. (2016) were clearly identified: Darwinian, Communitarian, or Missionary. The logit regression and the SEM-PLS model showed that the Communitarian attitude of the respondents does not influence the entrepreneurs' propensity to cooperate with other companies. On the other hand, the Darwinian mindset of social entrepreneurs discourages them from cooperating with classical enterprises. This phenomenon could not have been observed in the case of the altru-preneurs. The Missionary attitude negatively impacts respondents' willingness to cooperate, both social entrepreneurs and altru-preneurs.

Conclusions: The study confirms the usefulness of Fauchart and Gruber's (2011) theory and provides slightly astonishing results: the more missionary entrepreneurs feel, the less eager to cooperate with others they are. A possible explanation could be entrepreneurs' beliefs that the other companies' mission is incompatible with theirs. On the contrary, a negative influence of the Darwinian attitude of social entrepreneurs is predictable: the more importance they attach to being competitive, the less willing they are to cooperate.

Limitations and future research directions: The study analyzed entrepreneurs from different European countries. Unfortunately, possible national differences could not have been identified due to the insufficient number of respondents from each country. A promising direction for future analyses is to investigate all European countries and inquire about possible country-level differences.

Acknowledgment: The research was subsidized by the CE 1457 CE RESPONSIBLE INTERREG CENTRAL EUROPE Transnational Co-operation Programme, Sustainable model to support social entrepreneurship.

Keywords: collaboration, social enterprise, altru-preneur, social identity theory.

JEL Classification: A13, L26, L31, L33, M14

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The Role of Education Support for Economic Growth

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Background and introduction: Economic growth and the role of human capital are crucial topics in economics, essential for social well-being and stability. The research highlights the role of human capital in economic growth, emphasizing the returns on education and the impact of increased public investment in this area. The study builds on Diamond's (1965) overlapping generations (OLG) model, introducing three generations instead of the original two. Individuals live for three periods, and the economy operates infinitely long. The model includes a new variable compared to the original Diamond model: human capital, exploring its significance and role in economic growth within a closed economy comprising firms, consumers, and the government. Another innovation is that the consumers value their children's well-being, aligning with Barro and Becker's (1989) model of altruism.

Objective: The research aims to underscore the significance of human capital in economic growth, particularly focusing on the returns on education, and examines how increased public investment in human capital affects economic indicators such as production, consumption, and wages. While also addressing potential challenges like initial decreases in private investment and offering insights for further research within a modified overlapping generations model.

Methodology: In the model firms maximize profits, consumers optimize their utility over their lifetime, and the government handles exclusively fiscal policies. Consumers allocate their income to finance their own and their children's consumption and human capital investment. After defining the equations governing the behaviour of the model's participants: firms, consumers, and the government the model is simulated. Using the specified equations, the model is simulated to observe the dynamics of the economy under different scenarios of public investment in human capital. Besides providing a specific case to illustrate the model's application and results.

Results: The results demonstrate that increased public investment in human capital significantly enhances economic growth, wages, and consumption, leading to overall welfare improvements. However, it initially reduces private investment in human capital, indicating the need for balanced policies to encourage sustained public and private investment in education and training.

Conclusions: The analysis provides a basis for further research on issues like aging populations, underscoring that education and training are vital for long-term economic growth.

Limitations and future research directions: Limitations include model simplifications and initial declines in private investment. Future research should refine the model, address aging population challenges, evaluate policy effectiveness and conduct empirical studies. Changing the type of shock to the economy and incorporating a simple pension scheme into the model are further avenues for research.

Keywords: human capital, OLG, economic growth

JEL Classification: O40, I24, J11

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The Social, Economic, and Cultural Effects of a Countryside Marathon. A Case Study

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Background: Marathon running is not only a physically and mentally grueling exercise but has also become an economic drive in the host cities such as New York, Boston, Chicago, London or Berlin. The present paper summarizes the features of the annual Zalaegerszeg New Year's Eve Marathon, alias Mountain Man Marathon (MMM). As opposed to city marathons, which are usually run on flat and paved roads, the Zalaegerszeg New Year's Eve Marathon is a country marathon with a hilly, sometimes unpaved course around the city. As the late László Csorba Simon put it, it is a local patriots' run that includes all the high peaks of the surrounding hills.

Objective: The purpose of the present research is to shed light on the economic, social, and cultural impact of the Zalaegerszeg New Year's Eve Marathon.

Methodology: The methodology of the study relies heavily on interviews with former race directors, volunteers and participants, which also includes a SWOT analysis.

Results: The interviewed organizers agree that the Zalaegerszeg New Year's Eve Marathon attracts tourism and has an impact upon the local community.

Conclusions: In comparison with city marathons, country marathons attract more ultramarathoners and locals. Participants of the Zalaegerszeg New Year's Eve Marathon tend to rely on services offered by local restaurants and hotels.

Limitations: The limitations of the study are induced by its nature. It will be interesting to examine and analyze the economic, social and cultural aspects of the local triathlon event as well.

Keywords: economic, social, cultural impact, marathon, ultramarathoner, SWOT

JEL classification: Z2

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Transformations in the Hungarian Agricultural Land Market

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Background and introduction: It is interesting to observe the impact of demand patterns and supply constraints on the Hungarian agricultural land market in the past decade, as can be seen from the detailed analysis of the study.

Objective: The research indicates that there has been a surge in demand for larger, easily farmable and better quality farmland, particularly those with 1/1 ownership, leading to an upward trend in regional average prices, particularly in the arable sector.

Methodology: The study's calculations, using Hungarian data from the last eight years, show that the arable sector was most affected by shifts in demand and experienced higher average prices than other sectors. On the other hand, more volatile price changes are experienced in the grape and fruit growing sector, on the one hand due to the lower number of transactions and, due to the heterogeneous nature of the areas being marketed.

Results: With the increase in demand for premium farmland, the market experienced significant price increases. Towards the end of the examined period, however, the rigid supply limit restrained the growth rate of average prices. This natural internal process was an inherent constraint that sustainably stabilized ownership concentration and balanced supply and demand.

Conclusions: The analysis sheds light on the complex dynamics of the Hungarian agricultural land market, emphasizing the impact of emerging demand preferences and supply constraints. The observed trends provide valuable insight into the flexibility and adaptability of the market as it adapts to internal constraints while maintaining a balance of ownership concentration.

Limitations and future research directions: Overall, the presented analysis provides a deeper understanding of the long-term market dynamics of the Hungarian agricultural land market. It offers a solid foundation for decision-makers, researchers, and stakeholders to navigate the complexities of the market. It provides insight into creating sustainable policies that balance supply and demand.

Keywords: agricultural land market, ownership concentration, farmland prices

JEL Classification: Q15, Q11, Q31, R14, R10



Unpaid Work in the Economy, Is It Measured?

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Background and introduction: Household activities are related both to demography and economy. Our understanding of „work” focuses on those activities you have to do to get paid for them. However, the official basic concept of work (ICLS 2013) and production are broader, but in practice the narrower operational concepts are used in statistics. Although - by definition - household production consists of non-market activities that in principle could be replaced by market goods and services, domestic work remains invisible, as it is not part of the labour statistics, and only a very small part of it is covered by national accounts. Ignoring domestic work in economic statistics may cause distortion in assessing the consumption of households, economic performance of a country.

Objective: The aim is to assess the economic importance of domestic work with the help of statistical measurement. Analyse the ways how to measure volume and value of household production and assess the results.

Methodology: First the conceptual basis is discussed of the domestic production with clarification of the relations to market economy, secondly the potential measurement approaches are analysed. The input-based method (time allocated to domestic work, data from time-use survey) was used in the compilation of household satellite accounts in Hungary. The household satellite account is an accounting framework that provides an overall picture on the value of non-market household production (carried out for own and other households, furthermore, voluntary work) in a comparable way to the core system of national accounts. There is another strength of the method: it offers the possibility to make deeper analysis by activity or society segments.

Results: By the results of time use surveys the volume of time input, hours of unpaid work are at least equal to hours of paid work at national level. In Hungary the estimated value of domestic production amounts to 20-50 % of GDP depending on the methods used (KSH 2018, Szép K. 2018). The estimated role in the consumption, in the material well-being of households varies accordingly.

Conclusions: The respectable volume and value of domestic work is connected to the economy and society. If measured, it can contribute to better understanding of i.e. the intergenerational transfers, the time-need of child raising. A keener awareness of the domestic work serves to dignity of this labour.

Limitations and future research directions: Measurement problems are crucial, further efforts are needed concerning activity classification system, valuation methods, handling quality and efficiency differences, improve comparability as well as make time use surveys more frequent.



Keywords: domestic work, household production, time allocation

JEL Classification: D13, E01, J22

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Validation of Domestic Film-tourism Motivations: The Case of Visiting National Heritage Sites

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Background and introduction: Social media has been surpassed in speed by ‘film-induced tourism’ when stimulating travelers’ trips (eDreams ODIGEO, 2023). Likewise, in Phra Nakhon Si Ayutthaya’s province, Thailand, the Thai series called ‘Love Destiny 2’ caused the increase in number of tourists and hotel occupancy rate (Prachachat, 2023). This phenomenon also created the 84% recovery rate of Thai tourists resuming their trips (Jullapan, 2023).

Objective: Given the previous film-induced tourism research focusing on international tourists (e.g., Brenda, 2007; Kim, 2012; Kim et al., 2019a; 2019b; Ng & Chan, 2020), or on both international and domestic tourists (e.g., Gómez-Morales et al., 2023; Liu & Pratt, 2019; Oviedo-García et al, 2016), motivations of domestic film-tourism are deemed lacking. To address the aforementioned gap, this study that is in the ongoing second phase of the film-induced research project aims to: 1) develop a scale measuring the motivations stimulating domestic film-induced tourists to have the intent to visit their own national heritage sites, and 2) test if the positive causal impacts from these motivations to the intent to visit tourists’ own national heritage sites exist.

Methodology: Macionis’ (2004) s ‘Continuum of film-induced motivation’ framework is adopted as a main conceptual framework, together with the motives suggested in previous studies (i.e., Oviedo-García et al., 2016; Gómez-Morales et al., 2023; Kim, 2012b; Kim & Kim, 2021; Kim et al., 2019a, 2019b; Liu & Pratt, 2019; Suni & Komppula, 2012), as well as newly emerging motives gained from the first research phase in which the onsite interview was conducted. Moreover, previous studies (e.g., Chan, 2007; Gómez-Morales et al., 2023; Kim, 2012b; Kim & Kim, 2021; Kim et al., 2019a; Kim et al., 2019b; Macionis & Sparks, 2006; Ng & Chan, 2020; Oviedo-García et al, 2016; Suni & Komppula, 2012) propose that diverse tourism motivations are expressed by tourists actually visiting film-induced tourist attractions/destinations, thus, the relationship between film-induced tourism motives and visiting behaviors is assumed and H1 is formed as follows. H1. Film-induced tourism motivations positively impact the intent to visit tourists’ own domestic destinations.

Results: Considering the methodology, the questionnaire includes measurement items of film-induced tourism motives (i.e., social interaction, relaxation, escape, novelty, prestige, fantasy, nostalgia, control, education, self-actualization, romance, self-identity). The target sample size of 166, according to Minimum R^2 rule (Hair et al., 2014a), is aimed. Thus, at least 200 valid questionnaire set will mainly be collected near Ayutthaya's historical sites, adopting a convenience sampling technique. The partial least squares (PLS)



approach will be used as it is suitable for this research possessing the formative outer model (Hair et al., 2014b).

Conclusions: This research aims to theoretically yield contributions, proposing and empirically test a more updated and relevant set of motives to expand the body of knowledge related to film-induced tourism. Furthermore, this research could provide the guideline of the motives driving domestic film-induced tourists to Destination Management Organizations (DMOs) being responsible for marketing destinations that are highly potential to be film-induced tourism destinations, not only in Thailand, but also in other destinations facing relatively similar potential domestic film-induced tourism demand.

Keywords: Ayutthaya World Heritage, film-induced tourism, heritage sites, tourism motivation, tourism motive

JEL Classification: L83

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Well-Being of Talented Students – An Empirical Study at the University of Debrecen

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Background and introduction: Talent management in higher education is a continuously prominent issue because, in addition to the fact that university students have all proven to be talented since they are pursuing studies in higher education, it is important to mention those students who wish to engage in extracurricular activities beyond their mandatory university studies.

Objective: The purpose of the research is to examine the young participants in the university Talent Management Program as future employees, with the aim of understanding their life goals. A large proportion of university students do not have specific goals during their studies, and we hypothesize that, in contrast, talented students achieve high scores on scales of self-acceptance, action autonomy, prioritize continuous development, and growth.

Methodology: The Ryff-18 questionnaire assesses the level of well-being of the respondents. These aspects include self-acceptance, establishing quality relationships with others, a sense of autonomy in thinking and action, the ability to handle complex environments in accordance with personal needs and values and achieving meaningful goals and a sense of life purpose

Continuous personal growth and development. The questionnaire contained 18 questions related to the psychological well-being. The research is part of a longitudinal study, the first phase of which began in the 2016/2017 academic year, with the questionnaire being re-administered in the 2023/2024 academic year. The aim of the study was to examine generational differences, as the university-aged cohort in 2016 belonged to Generation Z, while those attending university in 2023 belong to the Millennial generation.

Results: All students in the Talent Management program were invited to complete the questionnaire. Thus, in the 2016/2017 academic year, 489 students and in the 2023/2024 academic year, 671 students received an email notification about the questionnaire. Of these, 359 students (73.41%) completed the questionnaire the first time, while in 2023/2024, only 112 students (16.69%) did so. The questions aimed at acquiring new experiences and knowledge received the lowest scores in 2016 (mean: 1.62; standard deviation: 0.903), while the highest score was given to the question about having given up on things that could have brought change to their lives in the past (mean: 5.21; standard deviation: 1.109). In 2024, the highest average was for the question about living day by day (mean: 5.33; standard deviation: 0.97), while the lowest score was given to the same question as in 2016 (mean: 1.607; standard deviation: 1.059).

Conclusions: Based on the results of the questionnaire, the students are goal-oriented and do not live day by day, which is characteristic of the students measured in both periods. Respondents in both surveys indicated that they consider acquiring challenging new experiences to be less important and prefer to maintain their focus on the set goals.

Limitations and future research directions: In 2024, only a small percentage of talents filled out the questionnaire, so by repeating the data collection in 2025, we would be able to obtain a larger sample size, and the comparison between the two periods would be more useful. In the future, we plan to continue the research by including the determination of students' team member types and also complement our results with a qualitative study. It may also be useful to examine the views of students from other universities', thus creating a comparative study.

Keywords: higher education, Talent Management Program, well-being, Ryff-18 questionnaire

JEL Classification: P3



What Factors Influence the Roundtripping of FDI in OECD Countries?

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Background and introduction: FDI roundtripping (defined as an investment in the home country of the multinational company, by use of an intermediary in a foreign country (Aykut et al., 2017)) is occurring increasingly often around the world. According to various estimations, roundtripping and transshipment can represent around one third of the world total FDI stock (Dammgard et al., 2018).

Objective: According to the literature, round-tripping may be motivated by tax differences and preferential treatment given to foreign firms as well as by political and institutional factors such as access to foreign capital markets, to better financial services or concealment of the true identity of the investor (Aykut et al., 2017; Borga, 2016). The literature analysed round-tripping motives at an individual country level (Russia and China mainly, e.g. Ledyeva et al., 2015 or Sutherland et al., 2019), or econometric studies, where roundtripping is lumped together with transshipment (Jones and Temouri, 2016; Jones et al., 2023), but it is not analysed empirically on its own and thus little is known about its importance and characteristics from a country of origin perspective.

Methodology: We present short country case studies in order to find possible explanations for round-tripping for Austria, Czechia and Hungary. Furthermore, we use a novel database: BPM6-BMD4 FDI data for 21 OECD-member economies for the period 2011-2021. We estimated our models with robust Driscoll-Kraay standard errors. We used roundtripping FDI/total FDI as a dependent variable and the independent variables were: GDP per capita, population, entry costs, FDI restrictiveness, revenues from profit tax as % of GDP, CFC rules, legal system and KOF financial and economic globalisation index.

Results: All the variables have the expected signs. We show that the share of round-tripping related FDI in total inward FDI increases with the level of development, decreases with country size, increases with entry barriers and with profit tax revenues, decreases with restrictive FDI environment and with CFC rules. Roundtripping is less present in German legal systems. Our results are novel as they separate roundtripping from other flows of FDI and they show the relevance of taxes, usually not found significant.

Conclusions: Tax is significant and highly important for roundtripping in OECD, which is a key result in an era, where a global minimum tax is to be introduced. Further research should include non-OECD economies.



Limitations and future research directions: OECD selected countries are analysed. Inclusion of non-OECD countries (if reliable data are available), country and sector case studies may highlight further important factors of roundtripping.

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Keywords: foreign direct investment, round-tripping, transshipment, home country factors

JEL Classification: F21, F65, G18



Why Does Digitalization of Logistics Operations not Improve a Firm's Competitiveness? Case of Serbian Exporting Companies

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Background and introduction: Logistics-oriented models of Industry 4.0 include connections between physical and digital dimensions of the supply chain, creating the concept of Logistics 4.0. This concept stands as a key driver for developing logistics operations and related services in the modern context. Projects dedicated to achieving the goals of logistics require dynamic changes to meet the requirements regarding timeliness and quality of service, as key potentials for competitive advantage.

Objective: The assumption about the positive impact of Logistics 4.0 on competitiveness is related to the evidence that new digital technologies significantly impact the organization of activities within the supply chain and logistics operations. As the empirical evidence in this area is rare, we aim to assess the Logistics 4.0 component and investigate its effects on firms' competitiveness. The focus is on export-oriented companies as they strongly depend on logistics performance and related activities for cross-border trade.

Methodology: Data was collected through a specially created questionnaire for this purpose. Our sample consists of manufacturing and non-manufacturing exporting companies. We conducted regression analysis using SPSS software to test the impact of identified Logistics 4.0 components on competitiveness. To test the readiness of exporting companies for the implementation of advanced technologies in logistics operations we present the results of descriptive analysis.

Results: Based on initial assumptions, we expected that digital transformation of logistics would enable achieving a higher level of flexibility and automation along supply chains, leading to the improvement of competitiveness. In contrast, the results show that there is no statistically significant impact of Logistics 4.0 on firms' competitiveness, based on the example of export companies in Serbia. At the same time, logistics services contribute to competitiveness.

Conclusions: Digitization and innovation can significantly affect the level of competitive advantages of companies, especially in foreign markets. Our results, however, indicate that in Serbia there is no proven effect of digitalization and application of modern technologies in logistics operations for improving competitiveness. As an explanation, we state several reasons including the current circumstances in the domestic business environment and the level of implementation and usage of ICT in logistics activities.

Limitations and future research directions: Limitations can be found in conducting research in only one country, which can be overcome in the future through similar research in different countries/regions. Suggestions for future research concern the identification of effects depending on the industry in which companies operate.

Keywords: Competitiveness, digitalization, logistics operations, logistics project management

JEL Classification: O22, O32, F13