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Green Bonds in the European Union: A Systematic Literature Review on Determinants, Impacts, and Methodological Trends (2017–2024)

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Background and introduction: Climate change is one of the most urgent issues humanity faces nowadays. To support the global effort, the Paris Agreement was adopted by 196 parties at the UN Climate Change Conference in 2015. Its goal is to limit the temperature increase to 1.5°C above pre-industrial levels. In response, the European Commission launched the European Green Deal. As part of this, the EU has committed to achieving climate neutrality by 2050, with a strong focus on building a sustainable financial system. One of the cornerstones of this framework is the EU Taxonomy, which provides a clear classification of environmentally sustainable economic activities, aiming to steer capital flows towards green objectives. Green bonds are prominent instruments within the EU's sustainable finance strategy. Their purpose is to channel capital into environmentally beneficial projects. Therefore, understanding their determinants and their impact on both financial and environmental outcomes is essential.

Objective: The aim of this study is to systematically explore the existing literature on green bonds, identifying key research themes and gaps related to their drivers as well as their financial and environmental impacts. The review focuses on the period between 2017 and 2024, covering studies connected to EU countries. It aims to map the most frequently investigated variables, uncover emerging methodological approaches, and identify unanswered research questions. The goal is also to support future empirical research by offering a synthesis of potential indicators and models. In addition, the review considers contributions from social sciences that help contextualize green bond dynamics within broader sustainability and policy frameworks.

Methodology: To achieve the goals of this study, a systematic literature review (SLR) was conducted, incorporating two key methodological tools: PEO (Population, Exposure, Outcome): This framework helped define the scope and structure of the literature search. Population referred to the research context (e.g., green bonds, EU countries), Exposure included sustainability-related concepts, while Outcome focused on the potential determinants and impacts of green bond issuance. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses): This tool was used to guide and document the article selection process, ensuring transparency and reproducibility in identifying relevant studies and excluding those that did not meet the criteria.

Results: The search returned 85 articles from 2017 to 2024. After manual screening, they were classified into three categories: relevant (papers discussing green bonds and their relationship with CO₂ emissions, ESG, or macroeconomic variables within the EU or European countries), contextual (studies addressing these variables or offering methodological or theoretical insights into their relationships), and irrelevant (studies that did not examine green bonds or their connections to macroeconomic variables, or were inaccessible). 17 articles were categorized as relevant, 13 as contextual, and 55 as irrelevant. No relevant studies were published in the first two years of the examined period. The highest number of relevant articles was issued in 2024. Among the relevant and contextual papers, 76.67% used regression. Efficiency analysis, volatility modeling, bibliometric analysis, structural modeling, and event analysis were each used in 3.33% of cases, while descriptive methods appeared in 6.67%.

Conclusions: This review highlights the growing academic interest in green bonds across the EU, especially in relation to CO₂ emissions, ESG performance, and macroeconomic indicators. Although many of the reviewed studies focused on related themes, partly because of the applied keyword structure, there was notable variation in both research objectives and scope. While numerous studies examined green bonds or macroeconomic variables in non-EU contexts, substantially fewer focused specifically on green bond issuance in EU countries and its macroeconomic and environmental implications. Methodologically, regression-based approaches dominated, while structural models and alternative techniques were rarely applied. These findings suggest that although

the variables are increasingly aligned, future research could benefit from more robust and diversified methodological frameworks to better evaluate the financial and environmental effects of green bonds within the EU context.

Limitations and future research directions: This literature review was limited to sources available in the Scopus database. Only peer-reviewed articles written in English and marked as final were included in the analysis. The search was further restricted by a subject area filter and focusing primarily on economics, business, and multidisciplinary publications. Articles published between 2017 and 2024 were considered. Although a wide range of keywords and synonyms were applied in the search query, relevant studies may still have been omitted due to the constraints of the search logic and database indexing. The scope of the review could be expanded in future research by incorporating additional search terms, exploring other academic databases, and including grey literature and non-English sources. These extensions could offer a more comprehensive understanding of the evolving relationship between green bonds, sustainability performance, and macro-financial indicators in the EU context.

Keywords: Systematic literature review, Green bonds, European Union, Macroeconomic determinants, CO₂ emissions

The economic opportunities and social constraints of women's participation in business in Hungary

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Background and introduction: The economic and social significance of women's presence in corporate management and the entrepreneurial sector is receiving increasing attention worldwide. Different cultures interpret and treat the role of women in economic decision-making differently, and significant regional differences can be observed in the intensity of women's business activity.

Objective: The aim of the research is to explore the structural and cultural factors that shape women's economic participation in Hungary and to contribute to a rethinking of gender equality from an economic policy perspective.

Methodology: Based on a review of the literature, this study examines the economic value of women's presence in business and the social and institutional factors that limit the realization of this potential. It pays particular attention to the situation in Hungary, where women's economic activity is strengthening according to certain indicators, but their participation in management positions remains low, especially in large companies.

Results: Our research has found that there is a correlation between women-owned businesses in Hungary, corporate decisions made with female representation, and the success and profitability of businesses.

Conclusions: Increasing women's participation in business is in the interests of both companies and economies, because higher participation of women in corporate management and the entrepreneurial sector directly and indirectly stabilizes and improves the performance of companies and, through them, national economies. This is supported by a review of the literature, which shows that women-owned businesses and corporate decisions involving women are associated with a company's performance and profitability.

Limitations and future research directions: Future research should explore the phenomenon of forced female entrepreneurship and the possibilities for supporting women who start businesses for livelihood purposes, as well as the impact of social norms and stereotypes on female leaders and entrepreneurial motivation in order to understand the diverse motivations behind female business activities and promote the growth of female entrepreneurial activity and leadership roles and economic and social development.

Keywords: Female entrepreneurs, Leadership, Financial impact, Incentives, Mobbing

Metadata Governance as an Enabler for AI-Driven Pharmaceutical Supply Chains: A House of Quality Approach

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Background and introduction: The pharmaceutical industry is rapidly integrating AI to enhance forecasting, resilience, and compliance in supply chain management. However, the success of AI systems is highly dependent on the quality of metadata used to train and run them. In regulated sectors like pharmaceuticals, metadata governance is critical for ensuring traceability, data integrity, and regulatory compliance. Yet, the combined role of metadata governance and AI remains underexplored.

Objective: This study aims to develop a conceptual framework using the House of Quality (HoQ) methodology to align metadata governance practices with AI system requirements in pharmaceutical supply chains. It seeks to identify critical governance features that enhance AI-driven supply chain decision-making and ensure compliance.

Methodology: A structured literature review (2015–2025) from Scopus-indexed journals was conducted using keywords such as "Artificial Intelligence," "Metadata Governance," and "Pharmaceutical Supply Chain." The findings are mapped into a House of Quality framework to align stakeholder expectations with metadata governance features.

Results: Although the study is ongoing, initial results from the literature review and conceptual framework suggest that improving metadata governance—particularly in areas like data lineage and semantic standardization—can significantly enhance AI system reliability and decision quality in pharmaceutical supply chains.

Conclusions: Although the study is ongoing, initial results from the literature review and conceptual framework suggest that improving metadata governance—particularly in areas like data lineage and semantic standardization—can significantly enhance AI system reliability and decision quality in pharmaceutical supply chains.

Limitations and future research directions: As a conceptual study, the framework awaits empirical validation through expert panels and simulation. Future research should test the model across different pharmaceutical contexts and explore its adaptability to other highly regulated industries.

Keywords: Artificial Intelligence, Metadata Governance, Pharmaceutical Supply Chain, House of Quality



Gender Inequalities in Education and the Labour Market: Structural Barriers and Perceptions

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Background and introduction: Gender equality remains one of the most urgent social challenges of the 21st century. Despite the significant improvements in the employment rates and economic status of women over the decades, significant gender gaps still persist. Gender imbalances in educational systems and the disadvantages associated with childcare remain obstacles to women's access to and success in the labour market. Women students with young children face structural disadvantages in both education and employment.

Objective: This paper explores how women's participation in the educational system affects their ability to enter the workforce. In order to comprehend the implications for women's career prospects, the research also focuses on the gender distribution of scientific recognition and the gender composition of higher education.

Methodology: The study uses secondary data and literature review to examine women's position in education and the labour market. It highlights female startup founders, gender disparities in scientific awards, and women's roles in sustainability. A questionnaire survey explored discrimination in education and work, focusing on perceptions of gender inequality and links between educational background and job market expectations.

Results: The findings indicate significant gender imbalances across academic disciplines, with some fields dominated by either men or women. Female respondents more frequently reported differential treatment by educators and perceived men to be in a more advantageous position in terms of formal and scientific recognition. These results highlight the persistence of gender inequalities and underline the presence of structural issues within the educational system.

Conclusions: The study confirms persistent gender inequalities in education and the labour market, particularly in recognition and career opportunities. Structural barriers remain significant, highlighting the need for targeted policies and further research to address women's unequal experiences and outcomes. Building on the sample under study, the results provide the groundwork for further investigation.

Limitations and future research directions: The size and representativeness of the questionnaire sample have been identified as the main limitations of this study. In order to obtain a deeper understanding of individual experiences and gendered narratives in education and employment, future research should be carried out on a larger and more diverse sample. Additionally, qualitative interviews could be a useful addition.

Keywords: gender equality, equal opportunity, education, labour market, discrimination



The Challenge and the Future of Artificial Intelligence: The Case of Győr Secondary Schools

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Background and introduction: In education, artificial intelligence presents a current challenge, as well as a glimpse into the future. AIEd is the new generation's tool - also for students and teachers, for learning and teaching progress.

Objective: Győr secondary school teachers and students' opinions on AI's impact on education were the focus of our research. In this regard, we believe that it is necessary for adolescents to acquire and utilize the new technologies due to their ability to explore the best ways to not only gain and use the new technologies in the future – for everyday life or university studies.

Methodology: The database was created between January and February 2025. The two questionnaires had been developed at the end of 2023. The questionnaires are self-complete; the respondent received the questionnaire via QR code and sent it after completion online. Online research can be shorter than face-to-face interviews. This has the advantage of not influencing interviewers. Anonymity and the possibility of self-complete make honest answers more likely. The questionnaire contains 26 questions.

Results: Our research shows that AI can become a driver of education if we learn to use it wisely together. We summarize the results into 3 main topic: usage of AI, teaching-learning process with AI and the school of future with AIEdTech.

Conclusions: Both groups see new opportunities for learning, but uncertainty about the changes also emerges. Openness to new ideas and continuous learning are key to success. The results show that the vast majority of the children surveyed have already encountered artificial intelligence in daily activities, and that they are more interested in technological innovations than afraid of them.

Limitations and future research directions: We would like to continue the research in the Széchenyi István University as well. We also want to try out some apps at secondary school or/and at the university, too.

Keywords: AIEd, Győr, secondary school, future, teaching-learning process



Organizational Onboarding and Generation Z: The Hidden Impact of Social Media

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Background and introduction: The workplace is undergoing vast changes with the entry of Gen Z (born between 1995–2010), the first generation to grow up in the age of social media. Their values, expectations, and work habits differ significantly from those of previous generations. Social media, as a defining feature of Gen Z's upbringing, influences how they communicate, collaborate and perceive work.

- Q1. How does social media influence Gen Z's expectations and behaviours in the workplace?
- Q2. What are the main sources of conflict during onboarding and strategies for resolution?
- Q3. What are the organizational responses to social media-driven changes in workplace onboarding?

Objective:

- 1. To analyze how social media shapes Gen Z's workplace behaviours and expectations.
- 2. To identify sources of conflict during onboarding and strategies for resolution.
- 3. To examine organizational responses to social media-driven changes in workplace onboarding.

Methodology: This conceptual paper develops a framework for understanding the unique onboarding challenges faced by Gen Z. First, we conducted an extensive review of literature spanning Gen Z characteristics, organizational socialization theories, onboarding challenges specific to Gen Z and digital media effects. Sources were identified through targeted keyword searches in academic databases and prioritized for relevance and scholarly impact. Following this, we engaged in a process of theoretical synthesis.

Results: The study highlights how social media shapes Generation Z's onboarding experience, influencing expectations, identity presentation, learning styles, and workplace integration. Instant feedback culture clashes with traditional onboarding, leading to frustration. Algorithm-driven self-curation hampers authentic adaptation, while fragmented attention demands microlearning. Social comparison fosters anxiety, and unmet diversity or mental health concerns push early departure.

Conclusions: The most important conclusion is that the difficulties in integrating Gen Z can be traced back to the adolescent brain's exposure to social media. Traditional training materials (e.g., long videos, documentation) often fail to capture Gen Z's attention. Microlearning and interactive modules may be more effective. Clear, goal-oriented guidance is important. Gen Z is also more sensitive to feedback. Onboarding programs should pay attention to psychological safety and empathetic communication.

Limitations and future research directions: Future research should empirically examine how these insights can be applied in practice, especially in the areas of microlearning, value-based integration, mental well-being support, and the integration of technological solutions into onboarding.

Keywords: Onboarding, social media, Gen Z, instant feedback culture, self-expression, microlearning, mental health



Women's participation in prostitution in Hungary

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Background and introduction: Though it's legality questionable, prostitution is a form of work that has a distinct presence in Hungary. It is a research area that requires unique solutions and approaches to study the phenomenon properly.

Objective: The aim of this paper is to carry out an exploratory research on prostitution in Hungary. The aim is to examine women's participation in prostitution. Where they do it, what types of activities they are open to. How long they have been participating in this type of work.

Methodology: We have taken a previous web scrapped database of a notable prostitution website commonly used in Hungary. Here we shall dive into the women partaking in prostitution work. We had access to not only the demographical data, but also their working times, and preferences in sexual activity.

Results: Currently it is evident that there is some level of racism amongst prostitutes, and there is a large presence of sexual deviance amongst participants.

Conclusions: Based on the preliminary results the majority of the prostitutes are heterosexual, however the presence of bisexuals is notable. The most discriminated against group from the prostitutes are the Roma whom, they do not wish to take on as clients.

Limitations and future research directions: This study is a preliminary research. We are currently working on an intensive longitudinal research, with a more complex scraping code. As well as an extended scope where the user's activities are also utilised.

Keywords: Hungary, Prostitution, Sociology of work, Women



The Sustainability Narrative: How Green Marketing Shapes Consumer Behaviour

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Background and introduction: Sustainable development is now central to society, government and economy, especially in strategic marketing processes. Environmentally conscious models reduce ecological footprints and offer a competitive advantage in saturated markets. The growing demand for environmentally-friendly products makes sustainable practices a strategic necessity. Green marketing opens new corporate communication paths but also brings risks like greenwashing, which can harm and consumer trust.

Objective: The aim of this research is to explore both the theoretical and practical dimensions of green marketing as a strategic corporate process, with a focus on its strategic application in the context of corporate sustainability frameworks. A further goal is to examine consumer attitudes, awareness, and trust in relation to green marketing and greenwashing practices.

Methodology: The study's first phase reviewed international and Hungarian literature to define green marketing, trace its evolution, and identify key strategies and application with special attention to greenwashing, its types and consumer attitudes. The second phase used a quantitative survey to assess consumer views about green marketing, greenwashing awareness, environmental consciousness, purchases attitudes, and trust in corporate sustainability messages.

Results: Findings show that while most consumers are aware of green marketing, they often distrust corporate intentions. Greenwashing triggers strong scepticism, weakening sustainability messages. However, growing awareness and positive attitudes indicate increasing support for truly sustainable practices. The study highlights that clear and genuine communication is crucial for effective green marketing.

Conclusions: The results reveal the dual nature of green marketing: it offers strategic benefits and meet rising consumer demand but poses reputational risks if misused. Greenwashing fuels mistrust, highlighting the need for authenticity and transparency in corporate communication. Overall, the study emphasizes aligning marketing efforts with real environmental practices to build lasting consumer trust and loyalty.

Limitations and future research directions: The study's limitations include the size and demographic characteristics of the sample, which primarily consisted of young, urban consumers. Future research should employ qualitative methods (e.g., interviews, focus groups) to gain deeper insights into the psychological drivers of consumer decision-making and explore the long-term impact of green marketing strategies on corporate reputation and consumer loyalty through longitudinal studies.

Keywords: sustainability, green marketing, greenwashing, consumer behaviour, corporate credibility, strategic marketing processes



Invisible strength: Resilience in Hungarian single-parent families

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Background and introduction: The proportion of single-parent families is increasing across Europe and in Hungary, while they face social and structural disadvantages. The aim of this research is to examine the resilience and social adaptability of these families, with a particular focus on the policy. The different support systems in European countries and societies affect the financial situation of single-parent families. Understanding the risk of poverty can contribute to understanding the resilience of these families.

Objective: The ultimate aim of the research is to explore the ways in which single-parent families are able to build resilience to socio-economic challenges and the structural and institutional factors that influence this process. At this stage, the aim is to explore the research that has been done so far on this topic.

Methodology: The research relies on secondary analysis: not a full Systematic Literature Review, but a systematic selection and thematic comparison of statistical data (Eurostat, OECD, KSH), policy documents (EU and national level), and family policy literature to build the theoretical framework for later fieldwork, academic literature (Scopus, Google Scholar). The literature search used keywords such as 'single-parent families,' 'resilience,' 'poverty risk,' and 'family policy' (2000–2025).

Results: The second analysis reveals the structural marginalisation of single-parent families, the limited availability of targeted policy support and their under-representation in the social discourse. At the same time, signs of resilience can be observed through informal networks of relationships and individual coping strategies. The next phase of the research will build on this theoretical foundation through qualitative fieldwork.

Conclusions: The results so far highlight the need to incorporate the theory of resilience into family policy and sociological discourse. The research provides a basis for future qualitative studies, also identifying key theoretical and structural dimensions.

Limitations and future research directions: The current research is limited to secondary analysis and theoretical sources, no fieldwork has been done yet. In the next phase, qualitative interviews will be conducted with members of single-parent families and their environment to explore in more depth the individual and community dimensions of resilience.

Keywords: single-parent families, resilience, social adaptation, social policy

Human-Centered AI for Decision Support Systems: Enhancing Usability and Trustworthiness

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Background and introduction: AI is revolutionizing decision-making, yet many AI-based Decision Support Systems (DSS) suffer from limited transparency, causing low user trust and resistance. Human-Centered AI (HCAI) addresses these gaps by emphasizing ethical design, interactivity, and user-oriented features. This study investigates how HCAI can improve DSS usability and acceptance, supporting ethical innovation in decision-making processes.

Objective: The research aims to explore how embedding HCAI principles such as transparency, interpretability, adaptability, and ethical design into AI-based DSS enhances user trust and system usability. The study seeks to develop a conceptual framework and evaluate its impact through empirical methods in high-stakes decision environments like finance and healthcare.

Methodology: A prototype DSS was developed with HCAI principles, including explainable outputs and user feedback loops. It was tested with domain experts using real-world datasets from finance and healthcare. Participants evaluated trust, decision accuracy, usability, and satisfaction. Results were compared with a traditional AI-based DSS to assess the practical value of the HCAI approach.

Results: Users interacting with the HCAI-based DSS reported significantly higher trust and understanding compared to those using traditional systems. Interactive explanations improved user engagement, while transparent logic increased decision confidence. The prototype demonstrated that HCAI features enhance both subjective user experience and objective decision performance.

Conclusions: Integrating human-centered principles into DSS design leads to more trustworthy, transparent, and effective decision-making tools. This approach supports responsible AI use, promotes digital inclusivity, and aligns innovation with societal values. It offers a sustainable path for AI integration in sectors where user trust and ethical alignment are essential.

Limitations and future research directions: This study was limited by scope and sample size, focusing on two application areas. Future work should apply the framework across diverse sectors and cultural contexts, using larger datasets and long-term testing. Further research should also assess regulatory implications and explore how policy can support ethical HCAI adoption globally.

Keywords: Decision Support Systems, Human-Centered AI, Transparency, User Trust, Ethical AI, Explainability, Human-Computer Interaction