International Scientific Multidisciplinary Conference

AI for a Smarter Tomorrow

AI-SMART 2025

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BOOK OF ABSTRACTS

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International Scientific Multidisciplinary Conference:
AI-SMART 2025

Artificial Intelligence (AI) for a Smarter Tomorrow

BOOK OF ABSTRACTS

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Preface

The *Book of Abstracts* of the *International Scientific Multidisciplinary Conference: AI-SMART 2025 – AI for a Smarter Tomorrow* provided a comprehensive overview of the research presented during the conference held in Belgrade, Serbia, on September 25–26, 2025. This volume offered concise insights into the breadth and depth of scholarly discussions focused on artificial intelligence as a key driver of economic, social, technological, and institutional transformation.

The abstracts reflect the conference's strong **multidisciplinary orientation**, covering applications of AI in economics, finance, management, education, law, tourism, security, healthcare, energy systems, and cultural studies. Numerous contributions examined how AI reshaped corporate sustainability strategies, financial markets, auditing, tax enforcement, fraud prevention, and international trade, highlighting both efficiency gains and emerging governance challenges.

A significant portion of the abstracts addressed **organizational and managerial perspectives**, including AI adoption in enterprises and public administration, managerial decision-making, workplace dynamics, generational attitudes toward AI, and human-AI collaboration. These studies emphasized that successful AI integration depended not only on technological capability but also on organizational culture, trust, skills development, and responsible leadership.

Education and knowledge creation represented another major thematic area. Abstracts explored generative AI in higher education, distance learning, academic authorship, grant evaluation, entrepreneurship education, and the development of new competencies across all levels of schooling. Particular attention was given to students' perceptions, ethical considerations, and the implications of emerging regulatory frameworks such as the EU AI Act.

The volume also captured AI's growing role in **creativity, communication, and culture**, with studies on prompt engineering, creative writing, translation, visual design, semiotics, and marketing. These contributions highlighted how AI tools interact with language, cultural codes, and human creativity, raising important questions about authorship, originality, and collaboration.

Legal, ethical, and policy-related issues were prominently represented, including analyses of AI liability, copyright challenges, contracting with AI systems, human rights safeguards, regulatory harmonization, and the use of AI in law enforcement and crime investigation. Together, these abstracts underscored the need for principled and transparent frameworks to govern AI development and deployment.

Applications of AI in **tourism, healthcare, security, and energy systems** further demonstrated its wide-ranging societal relevance. Contributions addressed AI-supported tourism management and education, medical decision support, cybersecurity, and the integration of renewable energy sources, illustrating how AI could support smarter and more sustainable solutions when aligned with public interest objectives.

Taken together, the *Book of Abstracts* captured the intellectual scope and diversity of AI-SMART 2025. It serves as a guide to the conference proceedings and as a reference point for researchers, practitioners, and policymakers seeking to understand current trends, debates, and future directions in artificial intelligence research. The volume reflected the conference's overarching goal: to foster informed, ethical, and inclusive approaches to AI in pursuit of a smarter tomorrow.

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Beyond Efficiency: How Artificial Intelligence Shapes Corporate Sustainability Opportunities and Challenges

Scientific review article

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Abstract: *Artificial Intelligence (AI) is increasingly seen as an enabler of corporate sustainability, yet its concrete contributions remain underexplored. This paper examines how narrow AI systems, particularly machine learning, can support sustainable value creation across the corporate value chain. Six domains are analyzed: research and development, procurement, production, logistics, product use, and end-of-life management.*

The study employs a mixed-method design, combining a structured literature review with three expert interviews. Findings indicate that AI generates notable economic and ecological benefits, primarily through efficiency gains, predictive analytics, and optimized resource allocation. Strong impacts are observed in production and logistics, where AI reduces emissions and waste. However, social contributions remain limited, with risks including job displacement, algorithmic bias, and opacity.

The paper concludes that AI cannot serve as a stand-alone solution but holds potential as a socio-technical enabler when embedded within governance frameworks that align innovation with ecological and social priorities.

Keywords: *Artificial Intelligence (AI), Corporate sustainability, Value chain*

The Role of Artificial Intelligence in Financial Markets and the Banking Sector in Albania

Original scientific article

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Abstract: *This research explores the transformative role of Artificial Intelligence (AI) in the financial sector, with a specific focus on Albania's financial market. AI has revolutionized financial operations worldwide by enhancing efficiencies, improving risk management, and optimizing customer services. In this study, the authors examine the adoption and implementation of AI technologies in financial institutions, specifically banks, and insurance companies in Albania. The authors analyze the opportunities AI presents, including cost reductions, revenue generation, and better risk assessment, while also addressing the associated risks such as data bias, transparency issues, and cybersecurity concerns. Through a comparative analysis with more advanced economies, is evaluated Albania's current AI integration level and its potential for future growth. The study uses both qualitative and quantitative methodologies to assess the impact of AI on Albania's financial system and its prospects for aligning with EU standards. The results of this research aim to provide actionable insights for policymakers, financial institutions, and stakeholders to facilitate the safe and efficient use of AI in Albania's financial market.*

Keywords: *Artificial Intelligence, Financial sector, GDP, Operational efficiency, Remittances*

Towards a Principled Framework for Artificial Intelligence in Tax Evasion Enforcement

Scientific review article

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Abstract: *Modern State economies face mounting fiscal instability, with tax evasion emerging as a critical destabilizing force. Persistent non-compliance stems largely from reliance on enforcement mechanisms conceived for fundamentally different socioeconomic landscapes, rendering them ill-suited to contemporary fiscal architectures. Artificial intelligence offers a transformative intervention: integrating AI into tax administration procedures could address these structural deficiencies by enhancing both the speed and precision of compliance oversight. However, this technological transition demands careful normative scaffolding. Without a robust and comprehensive legal framework governing AI deployment, implementation risks undermine the very fundamental rights these systems purport to protect. Therefore, any serious adoption strategy must prioritize establishing clear regulatory guardrails that balance innovation's efficiency benefits against constitutional safeguards, ensuring that modernization strengthens rather than compromises the fundamental principles governing State-taxpayer relationships.*

Keywords: *Artificial Intelligence, Tax evasion, Taxpayers' rights*

Unpacking Cybersecurity in Financial Research: A Systematic Mapping Approach

Scientific review article

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Abstract: *This study presents a comprehensive bibliometric and content analysis of cybersecurity research in financial institutions covering the period from 2000 to 2025. By applying the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology, we systematically identified and screened 2,005 peer-reviewed articles indexed in the Web of Science Core Collection. The review focuses on cybersecurity within the financial system, particularly in the banking and insurance sectors, and maps research trends, innovation gaps, and thematic evolutions in this domain. Thematic analysis on the basis of keyword co-occurrence identified three distinct clusters. The first cluster focuses on cybersecurity and artificial intelligence, including keywords such as cybersecurity, phishing, malware, and machine learning, highlighting AI-driven threat detection and digital defense mechanisms. The second cluster focuses on institutional risk management and information security, emphasizing governance, authentication, and systemic controls within financial institutions. The third cluster involves emerging digital technologies, such as blockchain, cloud computing, and FinTech, underscoring the technological innovations that shape financial services and data protection frameworks. Despite growing research output and increasing attention to cyber risk from both academic and regulatory perspectives, the field remains fragmented, with limited empirical evaluation of cybersecurity investment effectiveness. By combining PRISMA guidelines with bibliometric mapping, this study offers a structured and interdisciplinary overview of cybersecurity research in financial institutions. It highlights key research frontiers and calls for deeper empirical inquiry, particularly on systemic financial risk, cross-sector governance, and cybersecurity policy design.*

Keywords: *Cybersecurity, Financial institutions, PRISMA, Bibliometric analysis, Operational risk, Cyber resilience*

Audit Opinion Prediction Using the Decision Tree Algorithm

Original scientific article

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Abstract: *This paper presents a data mining approach for Audit opinion prediction in Government-owned enterprises within the Federation of Bosnia and Herzegovina using the Decision tree algorithm. A database was constructed from financial statements covering 2004-2019, incorporating indicators from balance sheets, income statements, and cash flow statements, alongside corresponding Audit opinions from the state audit body. The study evaluates three Decision tree algorithms (J48, RandomTree, REPTree) on data from 2020-2023, with REPTree achieving 73% classification accuracy through seven predictive rules. The findings demonstrate the potential of data mining techniques for pattern recognition in audit reports, contributing to transparency in financial reporting and supporting regulatory authorities in detecting irregularities within Government-owned enterprises.*

Keywords: *Audit opinion, Decision tree, Prediction*

AI-Assisted Approaches for Managing Non-Technical Debt in Agile Software Engineering: Preliminary Research

Scientific review article

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Abstract: *This paper reviews artificial intelligence-assisted (AI-assisted) approaches for understanding, measuring, and coping with non-technical debt (NTD) in agile software development processes. NTD refers to social, organizational, and process-related deficiencies that negatively affect software quality, productivity, and team collaboration. Unlike technical debt, which typically involves shortcuts in code or architecture, NTD emerges from misaligned structures, poor communication, or ineffective processes. Left unmanaged, such issues can accumulate over time, producing risks such as reduced team morale, delays in delivery, or even project failure.*

The review synthesizes research where AI has been applied to: (a) detect and predict social or organizational risks (e.g., community smells, where team structures or interactions signal future collaboration problems), (b) measure and estimate process inefficiencies and people-related issues that contribute to debt accumulation, and (c) support mitigation through automated recommendations and team-assistive bots. These applications illustrate how AI is beginning to extend beyond traditional areas of defect prediction or code analysis, entering the domain of socio-technical systems in software engineering.

An overview of NTD categories, their typical causes and consequences, and insights into how AI techniques can be used both to quantify NTD and to manage it proactively is provided. For example, social debt can arise when team members are isolated, or communication channels become overloaded, while organizational debt may result from unclear responsibilities or excessive hierarchy. Process debt often reflects inefficient workflows, such as poorly defined sprint planning or a lack of automation in continuous integration. People's debt, in turn, highlights problems such as skill gaps or uneven distribution of expertise within a team. Understanding these categories is critical, since they influence not only project outcomes but also the long-term sustainability of development organizations.

The role of AI in these contexts is promising. Early warning systems for community smells can help project managers intervene before problems escalate, while forecasting models for process breakdowns can allow teams to anticipate delays. Similarly, team-assistive bots can provide real-time reminders, suggest adjustments in workload, or recommend improvements to agile ceremonies. These examples suggest that AI does not merely replace human judgment but rather augments decision-making by providing timely insights derived from large volumes of process data. A concise map of the field is outlined, highlighting existing applications and future opportunities for leveraging AI to reduce NTD. This map shows both the potential breadth of AI use and the narrowness of current implementations. It also underscores the need for more empirical validation in real-world projects, as most applications are still in experimental or prototype stages. The paper adopts a literature review methodology to summarize the results of previous research on the proposed topic and to identify papers where AI was used to support early detection and mitigation of NTD. Peer-reviewed studies on different aspects of NTD, such as process debt, social debt, people debt, and organizational debt, were obtained. The search was performed on Scopus, IEEE Xplore, Web of Science, and Google Scholar databases, using combinations of keywords related to both NTD and AI.

The review highlights three main findings: (1) current research on NTD and AI-assisted NTD management remains fragmented, (2) while several NTD categories are recognized, few studies explicitly integrate AI to measure or address them, and (3) existing AI applications are limited to community smell prediction, process failure forecasting, and bot-based interventions. These findings suggest that the field is still in its infancy, with substantial opportunities for future work aimed at more comprehensive, data-driven, and AI-supported approaches to managing non-technical debt in software engineering, with a special emphasis on agile software development processes.

Keywords: *Non-technical debt, Artificial intelligence, AI*

The Integration of Artificial Intelligence in Economic Modelling: A Comparative Study of Traditional and AI-Based Forecasting

Original scientific article

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Abstract: *Economic forecasting has traditionally relied on econometric and time-series models such as ARIMA, VAR, and DSGE, which offer interpretability and theoretical grounding but face limitations in capturing nonlinear dynamics, structural breaks, and the increasing volatility of modern economies. Recent advances in artificial intelligence (AI), including machine learning, deep learning, and hybrid techniques, have introduced new possibilities for improving predictive performance and adaptability. This study presents a comparative analysis of traditional econometric models and AI-based forecasting approaches neural networks, ensemble learning, and reinforcement algorithms, evaluating their predictive accuracy, robustness to economic shocks, and applicability across key macroeconomic indicators. Using historical data from advanced and emerging economies, model performance is assessed through RMSE, MAE, and Theil's U. The findings show that AI-driven models outperform conventional methods in capturing nonlinearities and responding to high-frequency shocks, especially during periods of economic uncertainty. Nevertheless, challenges related to interpretability, data demands, and overfitting persist. The study concludes that hybrid models combining structural interpretability with adaptive learning capabilities offer a promising direction for improving forecasting accuracy and enhancing the practical value of economic policy analysis.*

Keywords: *Artificial Intelligence, Economic modelling, Forecasting accuracy, Machine learning, Hybrid models, Economic policy*

The AI Manager: A Safeguard for the Responsible Use of AI

Original scientific article

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Abstract: *Although the EU AI Act does not expressly provide for such a role, I believe that the AI Manager is a necessary figure to improve corporate processes, especially considering the increasing focus on artificial intelligence models. I am convinced that, in the future, no company will be able to do without this Officer, as it allows the enterprise to comply with European legislation and Union-based AI guidelines, thereby ensuring the pursuit of the primary objective set forth by the Regulation itself, namely to improve the functioning of the internal market through the development and use of artificial intelligence systems, while avoiding the so-called harmful effects of AI systems. In fact, on the one hand, the AI Manager aims to disseminate and share the concept of AI at all corporate levels, actively participating in programming and strategic decisions. At the same time, the specific expertise and skills of that Manager enable the company to maintain constant and effective oversight over the risks, including systemic ones, associated with the use of AI models throughout the entire supply chain and in every area and activity of the business. This, therefore, is in full compliance with the values of the Union. In summary, the AI Manager promotes innovation by fostering the dissemination of an anthropocentric and trustworthy artificial intelligence, tailored and adapted to the specific characteristics of the company in question, and therefore in relation to the nature and size of the business activity, while at the same time ensuring a high level of protection for health, safety, and the fundamental rights enshrined in the Charter of Fundamental Rights of the European Union, including democracy, the rule of law, and environmental protection.*

Keywords: *AI, Officer, AI Manager, Innovation, Harmful effect*

From Support to Autonomy: Examining the Role of AI in Managerial Decision Processes

Original scientific article

Emir Mašić
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Abstract: *This study examines the integration of artificial intelligence (AI) into managerial decision making processes within organizations in Bosnia and Herzegovina. Through a qualitative analysis of interviews conducted with managers across various sectors and in various positions, the research reveals a gap between global AI autonomy frameworks and local practices. AI adoption remains predominantly at the operational level, primarily through individual use of Large Language Models (LLMs) as productivity tools rather than organizational decision makers. Human managers maintain control, usually relying on intuition and personal verification to validate AI output. Key findings highlight the irreplaceable role of human oversight even in the AI age and regional barriers such as cultural resistance. The study concludes that the transition from AI-assisted support to genuine autonomy remains distant, emphasizing the continued importance of human judgment and adaptive leadership in the age of AI.*

Keywords: *Artificial Intelligence, Managerial decision making, AI Autonomy, Bosnia and Herzegovina*

Should I Stay or Should I Go? Dilemmas and Polarized Attitudes of Public Sector Managers Regarding AI

Original scientific article

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Abstract: *The public sector, characterized by structural inertia, strict regulations, and a low level of flexibility, faces additional challenges in relation to the major technological transformations of recent years, particularly those associated with artificial intelligence (AI). The research aims to investigate the perceptions of managers in the Romanian public sector regarding the opportunities and risks brought by the implementation of AI in organizations. The study employs a mixed-method design, combining two complementary approaches: a survey of 188 managers from public institutions and a focus group involving 7 managers from various public administration organizations. The results reveal a set of recurring trends. In the absence of a clear institutional vision, AI is perceived more as a source of risk than as a strategic opportunity. The study makes an important contribution to understanding this complex landscape by highlighting both the barriers and the opportunities perceived by public administration managers in relation to AI.*

Keywords: *Artificial Intelligence, Public management, Technological transformation*

The Use of Kaizen Methods for Reforming Public Services and the Impact on Public Administration Management

Original scientific article

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Abstract: *Public services ensure the continuity and recognition of the performance of public administration. It is essential that the management highlights the recognition of the community, in terms of economy and performance. The accumulation of factors that lead to the performance of public services is ensured through a management applied day by day, with the calculation of the managerial impact in the short, medium and long term, by initiating actions to improve what exists, identifying all processes and the existing correlations between them and mapping the processes subject to Kaizen methods. The design of public service processes is closely interdisciplinary with the action plan for the implementation of Kaizen methods and their reflections on public administration, which will materialize in the advantages for the beneficiary of public services and the community. The impact of public service reform, as a result of the use of Kaizen methods, is identifiable through the results of strategic and operational management, information processes and technology, the quality of public and administrative services, and the organizational culture based on performance improvement.*

Keywords: *Management, Performance, Public services, Public administration, Kaizen methods*

The Relationship Between Digital Transformation and Artificial Intelligence Adoption: An Empirical Analysis of Organizational Perceptions

Original scientific article

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Abstract: *The aim of this research is to investigate the relationship between the level of digital transformation (DT) of organizations and the use of artificial intelligence (AI) as well as its impact on the whole organization. Society and organizations face the challenges of continuous transformation as digital technologies continue to impact humans' everyday lives. DT evolved into being a strategic process for organizations because it influences the business model, management structure and market dynamics. We chose to execute a quantitative research method and did a survey based on a questionnaire, which was distributed on LinkedIn to respondents who have leadership roles at every hierarchical level in organizations. We have received 238 valid responses. The statistical analyses performed in SPSS included contingency tables, Chi-Square test, comparison of means (t-test, Mann-Whitney), and crosstabs for nominal items. The results show that the use of AI is not significantly correlated with the organization's level of digital maturity. They indicate a higher level of AI adoption in organizations in transition (62.2%) and digitally advanced organizations (57.7%) compared to poorly digitalized organizations (50.0%). However, the Chi-Square test result ($\chi^2(2) = 1.27$, $p = 0.53$) indicates that the difference is not significant. A significant difference emerges at the level of perceptions. Organizations that use AI evaluate the impact of DT ($p = 0.048$) and technologies ($p=0.018$) on the future of work significantly more positively. They also have a more favourable perception of the effect of digital technologies on humanity ($p = 0.002$). The non-parametric results (Mann-Whitney) confirm these differences. Thus, we conclude that the adoption of AI is changing the technological practices and the way leaders and employees perceive the opportunities and risks associated with DT. Our results show that organizations that use AI are more likely to encourage their employees to develop their skills for the future (90.6% compared to 76.8%, ($\chi^2(1) = 8.68$, $p = 0.003$). This orientation towards reskilling and upskilling confirms that the adoption of AI catalyses investment in human capital. The perception of the impact AI technology has on jobs does not differ significantly between organizations that use AI and organizations that don't use AI ($\chi^2(2) = 1.87$, $p = 0.39$), indicating that uncertainties about employment persist regardless of the use of AI. We interpret this as an early indicator of how "AI ready" organizations will be more willing to embrace Agentic AI and consolidate a competitive advantage. The managerial implications of AI adoption are: acting as a strategic accelerator, stimulating technological innovation, major cultural change, strong qualitative shift in human resources development and major changes in organizational structures, systems and leadership style. The study confirms that AI and, in perspective, Agentic AI is an organizational catalyst that shapes perceptions, policies and strategic trajectories of organizations. This means that the success of DT depends as much on human-AI collaborations as on the available technological infrastructure.*

Keywords: *Artificial intelligence, Organizations, Digital transformation, Management*

Artificial Intelligence in Serbian Enterprises: Adoption Levels, Obstacles and Sectoral Applications

Original scientific article

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Abstract: *This paper examines the adoption of artificial intelligence (AI) among Serbian enterprises, with a focus on adoption levels, obstacles, and sectoral applications. Based on a survey of 499 companies conducted in 2025, the findings show that only 29.1% of firms use AI technologies, with slightly higher adoption in manufacturing (31.1%) than in services (29.2%). The main barrier to adoption is the perception that AI is not useful or relevant for business operations, reported by 66.9% of non-adopters, followed by concerns about legal uncertainty, lack of knowledge, and high costs. Among adopters, the most frequent applications are data analysis and interpretation, customer support, and personalization in marketing. Sectoral differences are evident: services focus on customer support, while manufacturing emphasizes personalization and product development. The results suggest that informational barriers and limited internal capacities outweigh purely technological constraints, highlighting the need for targeted policy measures to foster AI adoption.*

Keywords: *Artificial intelligence, Adoption barriers, Manufacturing, Services, Serbia*

Analysis of AI Tool Usage and Work Engagement Among Generations X, Y and Z of Women in Slovenia

Original scientific article

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Abstract: *In the future, where artificial intelligence (AI) becomes an integral part of work environments, employee engagement faces complex challenges and opportunities. Research indicates that AI can both enhance and undermine engagement, depending on its implementation. The purpose of this study was to examine the use of AI tools (ChatGPT, Gemini, Copilot) and general work engagement among Generations X, Y, and Z. The sample included 311 women from various educational and professional sectors. The results showed that the use of ChatGPT significantly differs between generations, with Generation Y using it considerably less (35.5%) than Generations X (53.8%) and Z (50.0%). On the other hand, Gemini and Copilot had a very low adoption rate across all generations (8.4% and 9.0%, respectively), with no statistically significant differences. Significant differences were also found in work engagement, with Generation X reporting the highest levels (M = 35.93), followed by Generation Y (M = 33.87), and Generation Z the lowest (M = 31.28). These results indicate an uneven spread of AI tools and varying levels of work engagement, highlighting the need for tailored strategies to encourage AI use and improve engagement, especially among younger generations.*

Keywords: *Artificial Intelligence, Work engagement, Generational differences. Woman*

Predictors of Artificial Intelligence Acceptance: From Attitudes to Behavior Across Generational Groups

Original scientific article

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Abstract: *The rapid development of artificial intelligence (AI) raises questions about its acceptance across different generational groups, particularly in terms of trust, perceived risks, and actual use. This research, based on the Technology Acceptance Model (TAM), analyzes how generations X, Y, and Z perceive the benefits and risks of AI, contributing to understanding the social implications of AI for ethical and sustainable development. The aim is to identify key predictors of AI acceptance across generational differences. The research was conducted via an online survey distributed via social media from September 1 to 10, 2025, among a convenience sample of 101 respondents from generations X (1965–1980, N=33), Y (1981–1996, N=34), and Z (1997–2012, N=34). The 25-item questionnaire included demographic data, Likert scales, multiple choice and open-ended questions, and the data were analyzed using descriptive statistics and ANOVA. The results show that 66. 3% of respondents have positive attitudes towards AI, while Generation Y and Z show greater knowledge and use compared to Generation X. Perception of risk (fake news, deepfakes) was recorded in 75% of respondents, and 48% believe that AI can cause catastrophic consequences. Perception of usefulness of AI is high (91. 1% of respondents), as is perception of harm (95%). The findings indicate the need for tailored educational strategies to increase trust in AI. Future research should examine longitudinal behavioral outcomes and interactions of TAM variables.*

Keywords: *AI acceptance, Usage behavior, Generational cohorts, Risk perception, Trust, Regression modeling, Technology Acceptance Model*

Perceptions and Experiences of Hotel Employees with Artificial Intelligence in Business Operations

Original scientific article

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Abstract: *Artificial intelligence (AI) is increasingly changing business models in the hotel industry, enabling the automation of operations, customer data analysis, and the improvement of the customer experience. The purpose of this paper is to examine the current state, perception and potential applications of AI in the hotel industry, with a focus on technologies that enable personalised services, operational efficiency and increased productivity. The primary objective of the research is to analyse how hotel employees perceive AI as an emerging technology in the context of the hotel industry and how they perceive its future role in the hotel industry. Secondary objectives include identifying potential challenges associated with AI implementation and exploring the issues that employees may encounter when working with such systems. To gain a deeper insight into the current state, perception and potential of AI in the hotel industry, an empirical study was conducted using a qualitative approach based on semi-structured interviews with 10 hotel employees from different hierarchical levels and the results were compared with the responses generated by the AI chatbot (ChatGPT). The results indicate a growing presence and acceptance of AI in the hotel industry, but also emphasise the need for continuous training of employees in this area. Furthermore, the study emphasises the importance of striking a balance between technological development, human interaction and emotional intelligence in the delivery of hotel services. By combining a theoretical framework with research findings, this paper contributes to a deeper understanding of the current state of the hotel industry and provides concrete guidelines that can serve as a basis for further research and strategic development of AI applications in the hotel industry.*

Keywords: *Artificial intelligence, Hotel industry, Automation, Customer experience*

Partners or Threats? The Hidden Dynamics of AI Adoption in the Workplace

Scientific review article

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Abstract: *Artificial Intelligence (AI) is rapidly transforming organisational processes, reshaping the way employees approach tasks, collaboration, and productivity. Yet, the public narrative of seamless integration often masks a complex psychological and managerial reality. While companies promote AI as a tool to reduce workloads and free human creativity, employees frequently experience the opposite: fear, concealment, and mistrust. Emerging studies and workplace surveys indicate a striking discrepancy between the number of employees who actually use AI tools and those who openly admit to doing so. The underlying reason is not technological unfamiliarity, but rather organisational culture. Workers fear that acknowledging their reliance on AI will either (1) lead managers to increase their workload - assuming that AI has created additional "free time" - or (2) trigger downsizing, as managers conclude that fewer people are needed. This paradox reveals a deeper contradiction within contemporary capitalism. Instead of AI functioning as a partner -comparable to the autopilot assisting the pilot in aviation - it is perceived as a silent competitor or surveillance tool. The promise of "working smarter, not harder" mutates into an implicit expectation of "working faster, for longer." In this climate, efficiency gains are not redistributed to benefit employees, but rather reinvested into more demanding output targets. The psychological cost is considerable: rather than embracing AI as a trusted ally, many workers adopt strategies of silence, downplaying or hiding their AI use in order to protect themselves from managerial repercussions. Generational shifts further complicate this picture. Generation Z, entering the workforce with digital fluency, recognizes both the potential and the pitfalls of AI. Unlike older cohorts, many Gen Z workers display heightened awareness of the "productivity trap." Their response is twofold: on the one hand, they skillfully exploit AI for daily tasks; on the other, they increasingly seek professional niches where automation cannot easily replace human input - such as creative industries, care work, or professions that guarantee irreplaceable human presence. This is not merely a pragmatic career choice, but also a search for stability, dignity, and the possibility of genuine work–life balance, including vacation time. The broader implication is clear: organisations must rethink AI adoption not as an extractive opportunity to push employees harder, but as a collaborative redesign of human–machine partnerships. Transparent communication, ethical managerial practices, and redefined performance metrics are essential for cultivating trust. Otherwise, the hidden culture of fear will continue to undermine both innovation and morale. In conclusion, AI in the workplace is not solely a technological question but a socio-economic one, revealing the tensions between efficiency, labor relations, and the human search for meaningful work. Unless organisations reframe AI as a partner rather than a threat, the workplace risks becoming a site where technological progress fuels regression in employee well-being. Generation Z, with its refusal to accept the old trade-offs of overwork, may well be the catalyst pushing employers to finally embrace a more balanced model.*

Keywords: *AI at work, Organisational culture, Gen Z*

Enhancing Hotel Management Through Predictive AI Models for Customer Lifetime Value (CLV)

Original scientific article

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Abstract: *This paper introduces a hybrid artificial intelligence (AI) framework for predicting Customer Lifetime Value (CLV) in hotel management. CLV represents the long-term financial contribution of guests and provides information for resource allocation, customer retention, and profitability. Traditional models rely on structured reservation records, often overlooking emotional insights in online reviews. To address this concern, the study combines structured booking attributes with unstructured guest reviews, using RoBERTa embeddings for textual data and XGBoost for numerical features. The proposed multimodal model achieves 89% accuracy, 87% precision, and 86% recall, outperforming single-source approaches utilizing bookings (63%) or guest reviews only (72%). SHAP-based interpretability reveals that review topics including cleanliness, staff professionalism, and service quality directly influence CLV, alongside structured features such as repeat bookings and special requests. The findings highlight the potential of predictive AI to enhance hotel management by identifying valuable customers early, supporting personalized services, and optimizing strategic decision-making.*

Keywords: *Hotel management, Customer Lifetime Value, Predictive AI, Data science, NLP, Multimodal learning, RoBERTa, XGBoost, Sentiment analysis*

Beyond the Hype: Why Marketers Embrace Skills but Question AI's Intelligence

Original scientific article

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Abstract: *Artificial Intelligence (AI) has significantly influenced marketing in reshaping content creation, personalization, and customer engagement worldwide. There is ongoing discussion on whether AI can demonstrate "intelligence" or is limited to automation and data-driven efficiency without being able to mimic human creativity and judgment. Therefore, this study examines how North Macedonian marketers perceive, apply and adopt artificial intelligence in their businesses. The findings from qualitative interviews reveal two distinct narratives. On the one hand, marketers are keen to pick up new skills and understand how AI may boost output, refine customer insights, and provide a competitive advantage. However, they also raise concerns about the costs of integration and implementation, as well as AI's ability to replicate human intelligence.*

By moving "beyond the hype" this paper contributes practitioner-based evidence from an emerging economy, offering a nuanced viewpoint on how marketers strike a balance between hope and fear when implementing AI.

Keywords: *Artificial intelligence, Content creation, Digital marketing, Practitioner perceptions, Emerging markets, AI adoption, Human-AI collaboration, Technology acceptance*

AI-Enhanced Early Warning Systems Under the EU Digital Markets Act: Automated Detection of Consumer-Reported Platform Violations

Original scientific article

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Abstract: *This paper presents an AI-enhanced early warning framework for monitoring compliance under the European Union's Digital Markets Act (DMA). A fine-tuned BERT model classifies consumer discussions into Article 6 violation types (self-preferencing, bundling, discrimination, interoperability restriction) and combines results with community-level statistical validation. On Reddit data (n = 82; 2020–2025), the classifier achieved 86.2% accuracy and macro-F1 = 0.84; community validation averaged 0.86 with Z = 2.99 (p < 0.01). Projected operational costs decrease by ~90% relative to manual monitoring. The framework provides a reproducible, low-cost pipeline for proactive DMA surveillance aligned with Articles 5, 6, 19, and 20 and supports prioritization of investigations through confidence-weighted alerts.*

Keywords: *Digital Markets Act, Machine learning, Consumer intelligence, Platform regulation, Automated compliance*

Smarter, Less Loved: The Paradox of ChatGPT's Perceptual Evolution (2022–2025)

Original scientific article

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Abstract: *The adoption of conversational artificial intelligence does not depend solely on its technical performance but also integrates complex relational dimensions that shape the overall user experience. This study examines the evolving perception of ChatGPT across its four successive versions (GPT-3.5, 4, 4.5, and 5), analyzing how improvements in comprehension and contextualization interact with functional, emotional, trust-related, autonomy, and perceived control dimensions of experience.*

The longitudinal analysis draws on more than 20,000 YouTube user comments collected between November 2022 and August 2025, enriched by media and academic sources. Results obtained through an NLP methodology reveal a growing dissociation between functional quality and user satisfaction. While contextual understanding objectively improves (reduced hallucinations, ability to process long texts up to 25,000 words, enhanced performance in mathematics and programming), the proportion of satisfied users paradoxically declines. This downward trajectory can be explained by the differentiated evolution of experiential dimensions.

GPT-3.5 generated initial enthusiasm despite its limitations, with strong user control and cautious trust. GPT-4.0 consolidated technical performance while initiating emotional distance, as users expressed concerns about AI's growing autonomy. GPT-4.5 emphasized relational empathy, temporarily reinforcing trust through better adaptation to user tone and intent, but generating frustration regarding fine-grained interaction control. GPT-5.0, despite its technical power and dynamic routing system, crystallizes a relational crisis, being perceived as colder and less personal, and amplifying the sense of lost control.

The study highlights that increasing technical sophistication can paradoxically degrade relational experience. It underscores a major challenge for AI development: users expect systems that are not only reliable and contextually relevant but also warm, controllable, and trustworthy. This research suggests that the future of language models will depend on their ability to strike these balances.

Keywords: *ChatGPT, User experience, Conversational artificial intelligence, Technological trust, Perceived control, Emotional interaction*

AI Opens Up Variability in Education

Original scientific article

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Abstract: *The article is oriented on opportunities affecting the variability and quality of teaching in computer science subjects, focusing on databases and data warehouses. Artificial Intelligence (AI) is an accelerator of innovation from both the student and the teacher's perspective. It is not just about copying assignments to prompts for AI, but about learning to work effectively with available tools and creating conditions for further development of skills and abilities. Simplification of information availability is evident in the design and creation of databases. Advanced knowledge is manifested in the understanding of the activities performed and critical thinking, which leads to the analysis and selection of appropriate solution options with regard to learning outcomes. Positive benefits are brought by interactive tools such as questionnaires, think-pair-share tasks, and live online questions. A significant moment was the mutual learning of students in discussion and the support of their business plans.*

Keywords: *AI, Education, IT*

Smart Generation for Smart Governance: Education, Skills, and Knowledge in the European Union Policy Context

Original scientific article

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Abstract: *To address complex governance challenges and to act for social values, the smart governance in the European Union is closely linked with the smart generation, equipped with skills and knowledge. The human dimension of governance cannot be substituted entirely by technology. The present paper analyses the role of education as a strategic tool for promoting the new generations with strong skills and capacities to perform in an environment that is based on smart technologies. The focus is on the European Union policies that aim to strengthen human capital for the digital and green transition. The study investigates the EU strategies in the field of digital skills and green competences required for smart governance, the education and training policies at European and national levels (based on a comparison study), digital skills initiatives and knowledge sharing frameworks across the member states for identifying the best practices and challenges. From a methodological perspective, the research adopts an analytical and comparative approach, using data from EU policy documents, as the European Skills Agenda, European Green Deal, Digital Education Action Plan 2021-2027, and secondary data from Eurostat, Digital Economy and Society Index (DESI), and European Training Foundation. Preliminary findings show that there are significant differences among EU member states in terms of digital literacy, participation in lifelong learning and readiness of public administration to embrace smart governance. Countries that invest in education, innovation, and training have high levels of digital inclusion and resilient governance, and, per a contrario, the states where the education systems are less funded, and skills mismatches persist, smart governance is just a concept that evolves in terms of technology-driven and not citizen-oriented. The research explores the policies that put under the light the green competencies, digital skills, and civic education, as fundamentals for smart governance.*

Keywords: *Smart governance, Smart generation, EU policies, Education, Skills, Digital transformation*

Gen AI in Higher Education: A Literature Review in the ChatGPT Era

Scientific review article

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Abstract: *This paper offers a systematic literature review of current studies on GenAI in higher education, specifically emphasizing the ChatGPT era. The research synthesizes findings from a global context, showcasing the opportunities, challenges, and pathways for the responsible implementation of these technologies. The paper presents a comprehensive overview of global research on GenAI in higher education published between 2022 and 2025, collected from the Scopus database using specific keyword combinations. Through the systematic literature review, out of 312 identified papers, 54 highly significant studies were analyzed in detail. Therefore, this review offers a comprehensive perspective that is especially useful for universities operating within transitional educational systems.*

Keywords: *GenAI, ChatGPT, Higher education, Literature review*

Artificial Intelligence in Higher Education: What Has EU AI Act Brought?

Scientific review article

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Abstract: *The development of AI teaching and learning tools has progressed, which has led to concerns about the impact on the education system. This paper focuses on the system of higher education in the context of AI deployment. AI development has outpaced the regulatory framework and opened the debate about far-reaching ethical, legal, and social challenges. While the universities have been engaged in designing curricula to train students for the AI working environment of tomorrow, there is a need to develop policies for the strategic inclusion of AI into the higher education system. This paper investigates the EU AI Act and how it regulated artificial intelligence in higher education. In the paper, the author analyses the system of higher education in the Republic of Serbia with regard to EU regulations. The paper offers a view on what are the challenges when implementing rules for AI in the existing education regulation.*

Keywords: *AI, Higher education, EU AI Act*

Caught Between Innovation and Integrity: Insights Into Students' Perceptions of Generative AI Tools in an Institutional Context Lacking Formal AI Policies

Original scientific article

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Abstract: *Artificial intelligence is rapidly transforming higher education, continually oscillating between its innovative potential and concerns over academic integrity. While universities are expected to develop policies addressing ethical and pedagogical challenges, many institutions have yet to implement clear guidelines. To extract the dimensions of students' perceptions of generative AI, the authors primarily used exploratory factor analysis. By using the exploratory factor analysis three key dimensions were revealed, i.e. 1) awareness and familiarity with AI tools, shaped both by personal exposure and institutional practices 2) institutional engagement and guidance, emphasizing the degree to which professors integrate AI in teaching and the demand for clearer instructions on its use and 3) concerns ranging from perceived risks of misuse and violations of academic integrity to recognition of AI's educational value. These findings imply the urgent need for universities to establish transparent AI policies and provide guidance, ensuring that students can engage with AI tools ethically and effectively.*

Keywords: *Generative AI, Higher education, Regulatory framework*

The Need for New Competencies in Modern School Education Through the Use of AI

Original Scientific Article

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Abstract: *Perspectives on education, especially with the emergence and development of AI, impose new demands and actions for the training and professional development of teachers, regardless of the country where they carry out their didactic activity. Creating new competencies in education, particularly focused on the ability to apply and create new knowledge based on AI, as well as thinking creatively and critically, requires not only the existence of these competencies in educators but also the capacity to transfer these competencies from educators to students. This raises the issue of more attentive training and preparation of teaching staff, both in initial training and, especially, in continuing education. While initially, teacher training and professional development at universities focused on ICT (Information and Communication Technology) knowledge, today there is a need to learn how to use AI knowledge not as a replacement for the teacher's activity, but as a support and extension of it Lifelong professional development has been and remains a solution adopted by education systems worldwide since the reforms of the 1970s-80s, aiming to supplement and deepen initial training within an organized and efficient framework. It has been defined as "a set of activities and practices that require teachers' involvement to enhance their own knowledge, improve skills, and analyze and develop professional attitudes" (Peron, 1991, in EU Eurydice, 1997, p. 8). Within this activity, learning takes on the specifics of adult learning, shifting the focus from training to transformation. Continuing education thus becomes a framework for the cognitive, affective, and psychosocial development of adults, offering an opportunity for personal growth that allows individuals to create new knowledge and adapt accumulated knowledge to constantly changing and transforming contexts. Educators trained in this way are not only objects of training but active elements in a process open to a partnership with trainers. Today, this partnership can and should involve the widespread use of AI. The didactic approach in lifelong learning is student-centered, so the role of the facilitator is to design the context in which the student self-forms. Therefore, from the perspective of lifelong training, education aligns with an action that operates at the border between education and self-education, between knowledge and ignorance, using the newest educational techniques, with AI playing a crucial role in this process.*

Keywords: *Education, AI, Competitions, Modern, Lifelong, Ability*

Generative AI in Scientific Publishing – Opportunities and Challenges

Scientific review article

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Abstract: *This paper examines how generative artificial intelligence (AI) is reshaping scientific publishing through its growing role in authoring, reviewing, and editorial workflows. It maps the current landscape of generative AI adoption, highlighting how large-scale language models and image-based systems assist researchers and editors in writing, translation, visualisation, and content management. The analysis identifies both opportunities, such as efficiency, inclusivity, and innovation, and challenges, including accuracy, accountability, bias, and uneven policy implementation. Ethical implications are addressed through international and national frameworks that emphasise transparency, human oversight, and provenance verification. By synthesising recent literature and publisher policies, this paper argues for the institutionalisation of ethics-in-practice as a foundation for trustworthy AI integration in scholarly communication.*

Keywords: *Generative AI, Scientific publishing, Scholarly communication, Ethical frameworks, Editorial policies*

Evaluating LLMs as Educational Co-Authors: A Methodological Framework

Original scientific article

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Abstract: *This paper introduces and applies a novel methodological framework for the comprehensive evaluation of Large Language Models (LLMs) as educational co-authors. The purpose of this work is to address the lack of structured, reproducible processes for assessing the quality and practical utility of AI-generated educational content. A controlled experiment was conducted in which a standardised task was assigned to several leading LLMs. The effectiveness and quality of each model were evaluated within a newly developed framework that measures both the final product quality and the "refinement effort" required. The results reveal a non-linear evolution in model capabilities, highlighting persistent shortcomings in complex reasoning. The findings emphasize the importance of a holistic evaluation that considers both the final output and the efficiency of the collaborative process, offering a practical tool for educators and researchers.*

Keywords: *Methodological framework, Evaluation, LLMs, Educational, Co-authors, AI, Prompt engineering*

The Win-Code Predictive System: AI Grant Mentorship for Real-Time Evaluation and Enhanced Funding Success in Higher Education

Original scientific article

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Abstract: *Institutions in higher education (HE) face systemic barriers to securing competitive research funding (e.g., Horizon Europe and Erasmus+), driven by fragmented systems and a critical AI alignment gap that neglects strategic grant evaluation. This paper introduces the Win-Code Predictive System, the first comprehensive AI mentorship framework designed to address these failures. Win-Code reframes AI as a strategic mentorship partner, guiding research teams through an evaluation-aligned 26-step methodology. The architecture, which includes the SCORE™ predictive quality assurance engine, ensures proposal content aligns with funder criteria. A three-year validation study on Erasmus+ proposals demonstrated significant efficacy, reducing proposal development time from a 30-day baseline to just four days (an 85% saving). Users achieved a first-submission acceptance rate more than double the EU average of 26%, maintaining a 61% success rate by 2025 in a hyper-competitive environment. Win-Code offers a replicable blueprint for institutional innovation, positioning the university as an AI-Powered Project Hub.*

Keywords: *AI mentorship, Project development, Predictive system, Project evaluation, Higher education, Win-Code*

Modernizing Albanian Education Through AI: Enhancing Learning and Teaching

Scientific review article

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Abstract: *The traditional education system in Albania has often been rigid and stressful, leaving many students unmotivated and disengaged. In recent years, however, reforms have aimed to modernize learning through teacher training, curriculum updates, and the integration of technology and innovation. The implementation of technology is already reshaping Albanian education, creating new opportunities for both students and teachers. This paper examines the role of artificial intelligence (AI) in Albanian education. Although still in its early stages, AI is helping students through personalized tutoring, interactive tools, and content that simplifies complex topics, while supporting teachers in lesson planning, assessment, and the creation of customized learning materials. At the same time, careful implementation is essential. Without proper preparation, infrastructure, and attention to privacy and reliability, AI could introduce new problems. Addressing these challenges is key to ensuring AI becomes a meaningful and sustainable tool for improving education in Albania.*

Keywords: *Artificial Intelligence (AI), Albanian education, Technology in education, Personalized learning, Interactive, Student engagement, Enhancing teaching*

Implementation of AI Tools and Environments in the Learning Process

Scientific review article

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Abstract: *This paper explores the potential application of artificial intelligence (AI) tools and the capabilities of online environments to create fully functional applications tailored to educational needs. It not only describes the methods of use and implementation but also some of the techniques and approaches used in developing educational content. Online systems and integrated AI tools provide a comprehensive and qualitative learning process, stimulating activity and enhancing learners' interest in creating and utilizing learning resources (with all their specificities), with the primary goal of developing and enriching the learning experience and transferring knowledge into practical settings. At the same time, learners ensure content quality and support the learning process by complementing and developing certain approaches and activities, leading to modern forms and methods for problem-solving.*

In addition to current realities, the integration of AI tools and functionalities into environments helps enhance personalization, automate activities, improve accessibility, and optimize processes, ultimately leading to the transformation of education.

Keywords: *AI Tools, Learning Environments, Learning Experience, Modern Forms and Methods, Personalization, Transformation of Education*

Smart Vision on Integrating AI Into Distance Learning

Original scientific article

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Abstract: *In order to optimize teaching and learning methods, universities and faculties that have adopted distance and part-time education have as a priority the integration of the objectives regarding the improvement of the educational process into the organization's strategy. Both teachers and students are becoming increasingly familiar with what AI represents and develops in terms of the educational process, and acquiring skills in this area is a priority. In order to establish an opinion, the author conducted a questionnaire, based on which the students and teachers interviewed emphasized that technology is part of university life and can bring significant benefits to both students and teachers. This paper aims to clarify the contribution that the use of AI in the teaching and learning process can have at the level of distance and part-time higher education, so that the most appropriate ways of use can be defined and their future exploitation can be achieved.*

Keywords: *Artificial Intelligence, Distance education, SMART*

Chat GPT Study Mode in Interactive Learning

Original scientific article

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Abstract: *This paper proposes the integration of the Chat-GPT Study mode into the Information Technology classroom by covering the methods of experiment, observation and demonstration. The authors describe a methodological approach that uses an artificial intelligence application to implement an interactive lesson on "Internet Safety" and master basic knowledge on the topic in secondary school, through the Interland - Be Internet Awesome game.*

Keywords: *Chat-GPT Study mode, Interactive learning in secondary school, Interland - Be Internet Awesome game*

Artificial Intelligence and Creative Writing in Primary Education: Expanding Rodari's Fantasy Binomial Method

Original scientific article

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Abstract: *This article explores the expanded integration of artificial intelligence (AI) into primary education through the lens of creative writing using Gianni Rodari's „fantasy binomial" method. Building upon previously implemented pedagogical practices, the study presents a refined methodology where AI tools such as ChatGPT and DALL·E are used not only for text generation but also for visual storytelling. The research incorporates data from two second-grade classes and one third-grade class, utilizing surveys and structured observation to evaluate the impact of AI-assisted storytelling on students' creativity, language development, teamwork, and digital literacy. Results indicate that AI tools stimulate imagination, foster engagement, and support inclusive and differentiated learning. Ethical considerations, particularly regarding authorship and critical thinking, are also addressed. The findings support the notion that AI, when thoughtfully applied, can be a powerful educational ally in nurturing creative potential from an early age.*

Keywords: *Artificial intelligence (AI), Creative writing, Fantasy binomial, Gianni Rodari, Primary education, ChatGPT, DALL·E, Digital literacy*

Smarter Business ESP with Generative AI: From Generic Role-Plays to Case-Based, Domain-Authentic Lesson Design

Original scientific article

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Abstract: *This paper examines how generative artificial intelligence (GenAI), particularly large language models (LLMs) such as ChatGPT can support lesson planning and activity design in Business English for Specific Purposes (Business ESP). Based on classroom implementations with cycles of 100 undergraduate business learners, I report mixed outcomes: AI-generated role-plays accelerated preparation and sometimes boosted engagement, yet frequently lacked domain-authentic constraints and situational detail (e.g., stakeholders, metrics, risk, and policy). Synthesizing recent research (2023–2025) on GenAI in language education and Business ESP, I identify three recurrent failure modes—genericity, instructional opacity, and domain slips and propose a three-layer design framework that combines (1) structured prompt engineering for specificity, (2) teacher-authored case scaffolds with verifiable data, and (3) targeted use of complementary AI tools (adaptive feedback, corpus-assisted term mining, multimodal simulation). Business-focused lesson vignettes illustrate how the framework transforms "thin" role-plays into realistic scenarios (procurement negotiation with conflicting KPIs; stakeholder email chains; crisis briefings with media Q&A). An evaluation protocol and rubrics (authenticity, clarity, complexity, ethics, evidence-backing) are provided, with responsible-use guidance aligned with UNESCO's 2023 recommendations and the EU AI Act's AI-literacy obligations. Findings support the view that GenAI augments but does not replace pedagogical expertise; its value depends on careful integration and ongoing validity checks for accuracy, fairness, and academic integrity.*

Keywords: *Business English for Specific Purposes, Generative AI, Lesson design*

Fuzzy-OWA Contrasts: An Approach to Contrasting the Acceptability of Educational Innovation Projects

Original Scientific Article

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Abstract: *An innovative teaching project between Miguel Hernández University (UMH) in Spain and Michoacana University of San Nicolás de Hidalgo (UMSNH) in Mexico tries to integrate knowledge from Financial Mathematics (UMH) and Statistics (UMSNH). The objective of this work is to design a tool to test the effect of participation in this project on students' perceptions of Financial Mathematics in the UMH. To this end, students evaluated themselves before starting the project and immediately after completing it, using triangular fuzzy numbers. It is evident that the grading process involves a high degree of uncertainty, so students were asked to provide a range of values between which they considered the subject's assessment should be, the lowest, the most possible, and the highest. Since the assessment of subjects is subjective and depends, among other things, on the teaching environment, the students, the teacher, etc., it is especially advisable to consider the decision-maker's attitudinal character, whether optimistic or pessimistic. The Ordered Weighted Averaging (OWA) operator introduced by Yager is a method that considers an aggregation process, providing the maximum, minimum, and average. To test the null hypothesis, the fuzzy OWA case is developed, defining the acceptance and critical region. For this purpose, the degrees of optimism and pessimism will be introduced using two optimization programs, as well as the belief degree. The belief degree of accepting the null hypothesis is the supremum h value of the null or alternative region of acceptance, obtained using the proposed optimization programmes. The acceptance and rejection rules will be obtained using the Lebesgue measure of the OWA aggregation value of the extremes of the elements of the sample. For this purpose, the lower-pessimist OWA and upper-pessimist OWA operators are defined, assigning a weighting vector to the extremes (upper or lower) of the sample elements and quoting the differences between the corresponding extreme of the confidence interval and the OWA aggregate of the upper or lower extreme of the sample elements, normalizing said difference according to the OWA aggregate of the radii of the sample elements. High values of these operators will be an obstacle to accepting the corresponding hypothesis (null or alternative). Three rules will be considered, the first, assuming that the core-OWA is placed inside the confidence interval, and the other two, assuming that it is higher or lower than the confidence interval. This new contrast has allowed us to conclude that although there are significant differences between the perception before and after the project, the confidence degree for accepting the alternative hypothesis regarding the existence of significant differences in both observations with a confidence degree of 0.4835, which leads us to affirm that the project has helped students to improve their perception of the subject. However, it must be considered that a good part of the opinions fall within the acceptance region, which can be an obstacle to accepting the alternative hypothesis. Future work should develop tests against the different alternative hypotheses, considering cases where the variance is known.*

Keywords: *Fuzzy test, Teaching innovation project, Financial mathematics, Students, University*

Teaching Accounting Through Artificial Intelligence and Simulated Case Studies: Investigating an Experiential Approach in Economic Education

Original Scientific Article

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Abstract: *In the context of rapid digital transformation and the growing integration of artificial intelligence (AI) into business processes, accounting education faces the challenge of aligning pedagogical methods with the evolving realities of financial decision-making and reporting. This paper explores the potential of an experiential, AI-enhanced approach to teaching Accounting, focusing on the use of simulated case studies and intelligent tutoring systems. Rather than presenting tested applications, the study investigates how AI-based tools could be designed and implemented to support student engagement, ethical reasoning, and applied understanding of accounting principles. Three instructional concepts are proposed for future development: (1) AI-generated accounting scenarios, where students analyse fictional financial statements, identify inconsistencies, and propose adjustments or audit recommendations; (2) AI-assisted role-playing exercises, simulating ethical dilemmas in financial reporting, procurement, or budgeting, requiring students to make decisions and justify them; (3) Interactive tutoring systems, where AI provides personalized feedback, explanations, and guided walkthroughs of accounting procedures such as depreciation, cost allocation, or budget variance analysis.*

To support the conceptual development of these applications, the paper identifies and analyzes several existing AI platforms with potential for educational adaptation. Tools such as HyperWrite Operations Tutor (for interactive concept explanation), Virti and Exec Roleplay (for immersive scenario generation), and Eduaide.AI (for gamified learning design) are examined in terms of functionality, pedagogical relevance, and scalability. These platforms offer promising frameworks for building interactive, AI-enhanced learning experiences in accounting education. By outlining the pedagogical rationale, technological requirements, and potential benefits of these approaches, the paper aims to provide a conceptual foundation for future implementation and empirical validation. This contribution highlights the potential of AI to support the training of future accounting professionals in a global economic environment marked by complexity, regulatory change, and the need for ethical and resilient financial practices.

Keywords: *Artificial intelligence, Experiential learning, Accounting education*

Found in Translation: The Role of Prompt Language in Creative LLM Outputs

Original scientific article

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Abstract: *Artificial intelligence (AI) has rapidly become indispensable, with applications spanning natural language processing, image generation, and content creation. While large language models (LLMs) primarily process text in English as the global lingua franca, most of the world's population communicates in other languages, raising questions about the role of low-resource languages in prompt engineering. This paper examines whether the choice of input language—English, Croatian, or a hybrid of both—affects prompt quality and creativity in downstream tasks. Croatian, with its limited digital resources and smaller speaker base, was selected as a case study. A dataset of 100 articles from a Croatian agricultural news portal was used to generate Midjourney prompts via GPT-4o under three language conditions. The prompts and resulting images were analyzed for creativity, semantic consistency, and output quality. Findings reveal subtle but meaningful differences, suggesting that linguistic variation can influence AI-driven creativity. The study underscores the importance of evaluating low-resource languages in multimodal AI systems.*

Keywords: *Prompt engineering, Image generation, Low-resource language*

Photoshop vs. AI: Complementary Tools or Competition in the Creative Process?

Original scientific article

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Abstract: *In an era where artificial intelligence is entering every corner of creative expression, classic tools like Photoshop are facing new challenges. This paper explores the perceptions of 24 high school students, divided into web designers and media technicians, about the use of Photoshop and generative AI tools in the creative process. The results show that AI encourages rapid innovation and creative freedom, while Photoshop enables precise control and professional execution. Students recognize the synergy of the tools, but also their limitations, which opens up space for redefining the creative process in the digital age. The paper provides insight into the technical and artistic aspects and lays the foundation for a discussion about the future of creativity in education and professional design.*

A survey with a Likert scale (1–5) was used to measure students' perceptions of: control over details, creativity, speed and efficiency, complementarity and competition of tools, motivation and satisfaction.

To better understand the differences between the two groups of students — web designers and media technicians —their responses were analyzed using various statistical methods. The results of quantitative and qualitative analysis are presented in this paper.

Keywords: *Photoshop, AI tools, Creativity, Web designer, Media technician*

Data-Driven Approaches and Artificial Intelligence Applications in Security Research: Methodological Innovations and Future Perspectives

Scientific review article

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Abstract: *Data-driven methodologies and artificial intelligence are reshaping security research by enabling systematic, large-scale analysis of complex threat environments. Quantitative event data combined with statistical and network-based approaches allow for the identification of temporal and structural patterns in violent activity while remaining sensitive to definitional and reporting limitations. Advances in natural language processing, particularly large language models (LLMs), support thematic text mining, concept identification, and trend detection across extensive textual corpora, with human validation ensuring analytical reliability. Visualization techniques such as timelines, geospatial representations, and interactive dashboards enhance interpretability and communication of findings. Emerging directions include multimodal data fusion integrating textual, visual, and numerical sources, and predictive analytics aimed at early warning under conditions of uncertainty. Ethical and governance considerations, bias, privacy, transparency, and adversarial manipulation remain central to responsible research, reinforcing the importance of reproducibility, openness, and methodological rigor in contemporary security studies.*

Keywords: *Data-driven security research, Open-source databases, Large language models (LLMs), Data visualization; Data-literacy*

Meta AI About Trump – AI and It's Ability to Recognize and Interpret Metonymy

Original scientific article

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Abstract: *This paper investigates whether Meta AI is able to identify, analyze, and interpret metonymy found in political texts about the Trump administration published in The Guardian in the period 1.7.- 5.7.2025. It also considers whether Meta AI possesses the capacity to analyse creative political texts that reflect the conventional style of The Guardian's political discourse. This study suggests that Meta AI holds significant potential as a tool for linguistic analysis. Nonetheless, it requires targeted adaptations in order to fully address the complexities of metonymies in language within specific contexts.*

Keywords: *Meta AI, Metonymy, Cognitive theory of metonymy, Political texts*

The Difficulties of Investigating Crimes Committed in Virtual Space

Scientific review article

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Abstract: *The rise of immersive digital environments such as online games, social platforms, and virtual worlds has created new arenas for human interaction – and new opportunities for criminal behavior. This paper examines the specific challenges associated with investigating crimes that occur entirely within virtual space. These may include virtual theft (e.g., stealing high-value in-game items), online defamation, extortion, harassment, or impersonation, all of which take place through avatars or digital personas. A core difficulty lies in defining the legal relevance and ownership of virtual objects, identifying perpetrators hidden behind pseudonyms or avatars, and addressing jurisdictional uncertainty in decentralized, globally accessible environments. The talk highlights procedural, technical, and conceptual obstacles, including the lack of consistent legal frameworks and the ambiguous status of harm in digital-only contexts. By analyzing case examples and legal responses from different jurisdictions, the paper calls for the development of adaptive investigative techniques and coherent policies to ensure accountability in the virtual sphere.*

Keywords: *Virtual crime, Virtual theft, Digital harassment, Avatar-based identity, Jurisdiction in cyberspace*

Social Bonds as Drivers of Sustainable and Inclusive Growth

Scientific review article

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Abstract: *This article analyses the development, regulatory framework and perspectives of social bonds as innovative instruments of sustainable financing. Social bonds are used to channel capital into projects with clearly defined social benefits, such as job creation, affordable housing, healthcare and education. Their growth reflects the increasing alignment of financial markets with environmental, social and governance (ESG) principles while addressing pressing societal challenges. The discussion emphasises the role of international standards and the European regulatory framework in ensuring transparency, accountability and measurable results. In that context, digitalisation and new tools such as artificial intelligence can improve monitoring and impact reporting, strengthening investor confidence. By analysing their contribution to mobilising resources for socially inclusive projects, the paper highlights how social bonds support both financial returns and long-term social value creation.*

Keywords: *Social bonds, Sustainable finance, ESG, EU regulation, Inclusive growth*

Localtourism.it: For a New Corporate Humanism

Original scientific article

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Abstract: *International policymakers have been urging businesses to become more economically, socially, and culturally responsible, acting in line with the principles of corporate citizenship. Despite serving as an excellent showcase and instrument of external and self-regulation, sustainability reports and quality certifications do not adequately reflect the radical transformation that the economic sphere is quietly undergoing. Artificial intelligence (AI) is gradually gaining ground in various production sectors, raising concerns about its social, cultural, and human implications. This paper presents a participatory study of an innovative business network based in Foggia, a politically and socially peripheral area of southern Italy. This network is promoting an economic model that, through digitalization and AI, is closely interconnected with, and dependent on, the sociocultural development of its community of origin.*

Keywords: *Digital interaction, AI, Humanism, Holistic development*

Travel Decision-Making in the Age of AI-Opportunities and Challenges

Original scientific article

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Abstract: *Travel planning has undergone significant transformations over the past decades due to the advancement of information technologies. Traditional, in-person travel agency services have gradually been replaced by online platforms, enabling users to independently compare offers and organize their trips. In recent years, however, a new paradigm shift has emerged: the integration of artificial intelligence (AI) into the preparation and optimization of the travel experience. In the research, four freely accessible artificial intelligence programs and a focus group of four members were asked the same questions. Based on the results, it can be stated that although all respondents answered the questions correctly, the focus of decisions made by humans and artificial intelligence programs diverged significantly. While AI programs approached each question as a "blank slate," humans often possessed secondary, decision-influencing information about many cities and tourist destinations, acquired mainly from acquaintances' stories, movies, or social media.*

Keywords: *Travel decision, AI, Planning*

AI-Based Tools for Improving Visitor Experience and Tourism Management

Original Scientific Article

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Abstract: *This paper explores the application of AI-based tools in improving visitor experience and tourism management. It presents a theoretical model structured around three main elements: visitor experience improvement, destination management optimization, and business and operational intelligence. Each element includes sub-elements such as personalized recommendations, predictive analytics, and real-time monitoring systems. The study highlights the interconnections between these components and their role in supporting strategic planning, sustainability, and service personalization. Practical guidelines are proposed for governments, enterprises, and stakeholders to support the integration of AI into tourism systems. The findings underline the importance of cross-sector collaboration, investment in digital infrastructure, and ethical data usage. Artificial intelligence is positioned as a key enabler of more adaptive, efficient, and visitor-centered tourism development.*

Keywords: *AI-based tools, Visitor experience, Tourism management, Innovation*

Application of Artificial Intelligence in Tourism University Education Process

Original scientific article

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Abstract: *Artificial intelligence (AI) is becoming increasingly important in the planning, communication and service delivery processes in the tourism sector, including tour guiding. The paper explores the potential of using artificial intelligence in the development of thematic routes within the context of tourism education at Sofia University. A specific case study is presented. The emphasis is placed on the application of ChatGPT as a tool for tourist routes generation, tour texts creation, itinerary planning, and research support. The consecutive steps undertaken by the students and their mentor in applying this particular AI tool in the education process as well as the final result representing a real guided tour, are being traced. The advantages and the challenges of integrating AI into the educational process are outlined. The conclusions made highlight the importance of critical literacy and a creative approach in applying technological tools in the training of future tourism professionals.*

Keywords: *Artificial intelligence, Tour guiding, Higher education*

Generative Semiotics in a Single Culture: How Prompts Shape Serbian Cultural Codes

Original Scientific Article

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Abstract: *Generative systems are increasingly used to produce visual content, yet the effect of prompt formulation on cultural representation remains under-measured. This study examines a single-culture case (Serbia) to isolate prompt effects on cultural markers in AI-generated images. A controlled factorial design constructs a corpus across three domains (workplace, family meal, tourism) and two visual styles (photorealistic, illustrative), with three prompt variants: neutral (no cultural tokens), cultural (one to two discrete cultural tokens), and aesthetic (advertising-oriented phrasing without cultural cues). Images are annotated with a standardized coding scheme covering clothing/artefacts, architecture, food/utensils, script, ritual/gesture, composition, a single connotative theme, and a one-sentence "myth." Solo coding is audited via a 15% test–retest procedure (Cohen's κ/weighted κ). Outcome measures include diversity and entropy of markers, frequency of predefined "package" co-occurrences, an advertising-gloss indicator, and prompt compliance. Mixed-effects models evaluate prompt and style effects with false-discovery control. The approach avoids tautology by separating spontaneous markers under neutral prompts from effects of explicit cultural requests and by limiting cultural tokens to controlled doses. The contribution is a replicable method for measuring homogenization and cliché formation in a single-culture setting, with implications for education, media, and marketing practice. Pilot results on a 180-image subset will be presented.*

Keywords: *Generative AI, Semiotics, Encoding/decoding, Visual communication, Cultural markers, Serbia, Prompt design, Image analysis*

Enhancing Economic and Social History with AI: Evidence from the Conscription Lists of the State Archive of Caltanissetta (1843–1900)

Original Scientific Article

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Abstract: *Artificial Intelligence (AI) technologies are transforming many fields of knowledge, including historical research. The increasing availability of digitised archival sources makes it possible to apply advanced algorithms to extract, normalise and analyse large volumes of information from handwritten records. This enables new perspectives, combining micro-historical reconstruction with large-scale quantitative analysis on demographic, economic and health dimensions. This paper presents a case study focused on the liste di leva (conscription lists) preserved in the State Archive of Caltanissetta, covering selected cohorts between 1843 and 1900. These registers, compiled annually by municipalities, recorded all 19-year-old male residents, including personal, familial and occupational data, later updated by military authorities with anthropometric measures, medical notes, and final decisions on eligibility for service. Despite their richness, these sources have long remained underexploited, mainly due to their bulk and handwritten nature, which hinder large-scale consultation. Our methodological approach integrated three steps: (1) high-resolution digitisation of the registers and archival organisation by year and municipality; (2) optical and handwritten text recognition (OCR/HTR) using Transkribus and customised models trained on 19th-century Italian, adapted through supervised machine learning; (3) natural language processing (NLP) techniques to segment, parse and normalise the information into structured fields (name, age, profession, birthplace, medical outcomes). The application of this workflow to the Caltanissetta conscription lists resulted in the transcription and structuring of 11 registers, corresponding to several thousand individuals, into a relational database. Automatic recognition achieved an accuracy of 85–90% for standard fields, with manual corrections required only for rare names or abbreviated medical annotations. These outcomes, consistent with other archival projects, confirm the feasibility of applying HTR to Italian 19th-century sources, traditionally considered difficult due to graphic and linguistic variability. This first step has produced a searchable, structured dataset from complex handwritten sources. The next phase will involve systematic analysis of the data to uncover new historical evidence on demographic profiles, social structures, economic conditions and health patterns in 19th-century Sicily.*

Keywords: *Conscription lists, Artificial Intelligence (AI), Handwritten Text Recognition (HTR), Economic and social history*

Winners and Laggards in the AI Era: Cross-Country Causal Evidence on Trade Performance and Inequality

Original Scientific Article

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Abstract: *The emergence of artificial intelligence (AI) is reshaping international economic relations, fundamentally altering how countries engage in trade, compete for market shares, and formulate policies. The integration of AI into international economic relations presents both opportunities and challenges that could significantly reshape global trade patterns. The impact of AI on global trade is substantial, driven by improvements in operational efficiency, the transformation of supply chains, and the evolution of legal frameworks. By influencing competitiveness and enhancing cross-border transactions, AI represents a pivotal factor in the evolution of economic interactions between nations. As countries adapt to the AI-driven landscape, the need for comprehensive policies to manage these changes and address the underlying legal and ethical issues becomes increasingly critical. As a fundamental component of competitive advantage in international economic relations, technological advancements, particularly in AI, enable countries to shift their positions in the global value chain. Countries that adeptly leverage AI can experience economic growth and strategic repositioning within global supply networks. Conversely, nations lagging in AI adoption may face increased difficulties in competing for market shares, leading to increased economic disparities. The integration of AI into global trade processes can significantly lower transaction costs, thus altering trade patterns. AI tools, such as machine learning and predictive analytics, optimize decision-making in supply chain management and logistics, fundamentally changing how businesses operate across borders. In particular, AI facilitates smoother customs operations, enhances inventory management, and improves demand forecasting, allowing firms to respond more rapidly to shifting market conditions. This transformation leads to more streamlined operations, encouraging firms to expand their international reach and reshape the global commerce landscape. By lowering barriers to entry for smaller players in the worldwide marketplace, AI supports the democratization of trade, enabling firms from developing countries to reach consumers worldwide. This can revolutionize traditional trade relations and create new synergies among nations. A methodological framework with a strong conceptual foundation will be based on cross-country comparisons of a group of countries clustered according to their levels of AI adoption. Propensity score matching is one of the techniques that compares similar economic profiles across different levels and is a pillar of empirical analysis. The second pillar of the distribution analysis presents results using the DiD (Difference-in-Differences) approach, comparing economic outcomes before and after the implementation of AI-related policies. The potential for AI to exacerbate economic inequality and perpetuate existing disparities necessitates a careful assessment. As advanced economies leverage AI to increase productivity, developing countries may struggle to keep pace, potentially resulting in a situation where the benefits of AI are concentrated among a few leading nations. Therefore, proactive policies are essential to mitigate these outcomes, such as technology-sharing initiatives and bilateral agreements that support the development of AI capabilities in less affluent societies.*

Keywords: *International trade, Artificial Intelligence, Clustering*

Regulating AI in International Trade Agreements: New Horizons for Harmonization?

Original Scientific Article

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Abstract: *With the possible decline of the World Trade Organization, international trade agreements seem to be gaining greater prominence. In the past decade, we have seen multiple new trade agreements being negotiated, involving highly developed and globally significant economies, such as Japan, South Korea, Singapore and the European Union. But as global trade evolves, so do its regulatory needs. One of the most recent aspects of this is the emergence of AI regulation within trade agreements, starting in 2019. Though most of the existing provisions are relatively rudimentary, they represent a significant effort for creating binding international solutions on AI regulation. The reasoning behind their inclusion is logical: trade agreements have been growing more comprehensive in character, moving past traditional topics of trade in goods and services, into fields that are more adjacent or connected to trade. And beyond traditional trade agreements, we are now seeing the rise of dedicated digital economy or digital trade agreements. These new types of trade agreements exclusively focus on the challenges of the digital economy, and thus often cover artificial intelligence as well, as one of their crucial topics (alongside other issues such as cross-border data flow, digital market access, and so forth). Although this DEA or DTA trend originated in Asia and the Pacific (with the first being an agreement between Japan and the USA, followed swiftly by Singapore pioneering the new model), it has now moved into Europe as well, with the EU signing two digital trade agreements of its own. The purpose of my presented research is threefold: first, to highlight the present landscape of AI regulation in international trade law, examining both the more traditional trade agreements with relevant provisions as well as the newfangled digital trade agreements. Second, I aim to establish what pattern can be observed from these findings, particularly with regard to which economies seem more open to regulating AI in such an international way, and which appear more keen on retaining domestic control. Third, I aim to answer my principal research question: Are international trade agreements a suitable arena for comprehensive AI regulation, or whether would they necessarily stay as rudimentary commitments and shared policies? The principal method I would be utilizing for the realization of these goals is a comparative textual analysis of extant digital trade agreements, as well as traditional trade agreements. Scholarship is still relatively underdeveloped in this area of international trade law, owing to the first AI provision only appearing in 2019, but my research will likewise incorporate what findings are already available. Through these efforts, I will be able to paint a concise and clear picture of both the status quo of the matter, and the most likely futures we are looking forward to, and what these mean for wider regulation of AI.*

Keywords: *International trade law, Trade agreement, Digital trade*

The Use of Artificial Intelligence in Fraud Prevention in International Payment Systems

Original Scientific Article

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Abstract: *The rapid growth of international trade and the increasing complexity of cross-border financial transactions have made fraud prevention one of the most pressing challenges in global payment systems. Traditional approaches, based on manual verification and rule-based monitoring, are proving insufficient in the face of sophisticated fraud schemes, cyberattacks, and the speed of digital transactions. As a result, financial institutions are increasingly adopting artificial intelligence (AI) solutions to enhance security, reduce risks, and protect both corporate and retail clients engaged in international business. This paper aims to analyze the potential and practical applications of AI in fraud detection and prevention in international payment systems. The research focuses on how machine learning (ML), natural language processing (NLP), and predictive analytics are integrated into anti-fraud mechanisms used by banks, fintech companies, and payment service providers. Special attention is paid to the ability of AI tools to detect anomalies in real time, evaluate suspicious transactions, and adapt to new fraud patterns faster than traditional rule-based systems. The literature review will draw on recent studies in the fields of financial technology, cybersecurity, and international banking, providing an overview of current best practices. Case studies of leading institutions, such as SWIFT's Customer Security Programme and Mastercard's AI-driven Decision Intelligence, will illustrate practical implementation and the effectiveness of AI solutions in cross-border payments. Furthermore, the paper will address the role of AI in compliance with international regulations such as AML (Anti-Money Laundering) and CTF (Counter-Terrorist Financing), emphasizing how AI enhances the monitoring of large-scale international payment flows. In conclusion, the paper argues that the use of AI in fraud prevention is becoming a critical competitive advantage for banks and fintechs operating in international markets. While risks remain, the benefits of improved security, real-time monitoring, and adaptive learning outweigh potential drawbacks. For policymakers, regulators, and practitioners, understanding the transformative role of AI is essential for shaping the future of secure and efficient international payment systems.*

Keywords: *Artificial Intelligence, International payment Systems, Fraud Prevention, Machine learning, Fintech*

Legal Responsibility of Artificial Intelligence?

Scientific review article

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Abstract: *Artificial intelligence, in the way it has entered the social life of people, is starting to create legal situations that are not yet legally resolved. There is no doubt that the development of artificial intelligence, even the one that is visible to the ordinary user, has led to it being able to make "autonomous decisions" for many of the activities it undertakes. This is not pre-programmed, but is part of independent decision-making and "feeling" based on "experience". The law, and thus society, has as its ultimate goal the sanctioning of socially harmful activities. Therefore, we rightly impose the thesis that it is necessary to sanction the "behavior" of artificial intelligence. Formally and legally, sanctions can be imposed only if they are previously provided for in legal or by-laws for milder sanctions. The very fact that artificial intelligence is not represented as a separate identity in any legal act, and cannot be fully integrated into the two existing ones (legal and natural persons) imposes the thesis, but also the need for it to be legally regulated. Many people, as well as businesses, base their decisions on predictions or advice provided by artificial intelligence. Many of these are paid services, i.e. services based on artificial intelligence platforms that are charged. This leads to the legal and logical conclusion that a formal legal relationship has been established between the user and the artificial intelligence platform, from which rights and obligations arise. In this paper, we will delve into the details of the End User License agreement of several of the better-known and most widely used artificial intelligence platforms to discover whether there are hidden provisions in that agreement that "exempt" artificial intelligence from liability, to what extent, and we will provide guidance on how all of this could change in the direction of protecting the interests of individuals. Artificial intelligence will certainly not disappear from our lives. It is not here temporarily, It can progress with its presence, but not retreat. It is a similar process of industrialization, electrification, and the like that history knows in its infancy, and we as the next generations experience it as normality. The same fate will follow artificial intelligence. We will witness its birth, future generations will experience it as everyday life and necessity. Although it may be a weak method, for now the law is the only one that can fight for some kind of control over it, not to control it in its development, but for the sake of protecting the interests of the individual who must not be left alone.*

Keywords: *Artificial intelligence, Legal responsibility, Legal subjectivity*

Legal Liability of Intelligent Robots: Challenges and Prospects for Reform

Original Scientific Article

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Abstract: *Artificial intelligence and advanced robotics are disrupting the traditional foundations of law. "Intelligent robots" are defined by scholar Ryan Calo as "Robots capable of sensing, processing, and acting autonomously in a complex environment" (Calo, 2015). They are equipped with autonomous decision-making and sometimes machine learning capabilities, and are increasingly present in the medical, industrial, domestic and even judicial spheres. This autonomy raises many questions, particularly when a robot causes harm. Civil and criminal liability law had traditionally been based on the notion of human fault or a relationship of subordination between an object and its user. However, intelligent robots transgress, as their decisions are not always entirely foreseeable or controlled by humans. This leads to a fundamental question: how can the law regulate the liability of intelligent robots? To address this issue, this research adopts a comparative legal approach, drawing on both positive law and contemporary doctrinal analysis, while also considering forward-looking proposals stemming from recent legislative debates. The objective is to identify the limits of existing legal frameworks while analyzing the solutions envisioned at the international level to better regulate the liability associated with intelligent robots. To that end, it is necessary first to study the limits of the current legal framework in the face of intelligent robots (I), and then to explore possible ways to adapt this liability regime (II). The comparative analysis of contemporary legal systems highlights the diversity of approaches adopted to regulate the liability of intelligent robots. Traditional approaches, focused on human responsibility (designers, manufacturers, users), remain predominant and constitute a universally recognized legal foundation. At the same time, regulatory initiatives from the European Union reflect a willingness to adapt the law to emerging technological challenges through the creation of targeted liability regimes. Innovative legal and technical solutions, such as algorithmic traceability, blockchain registration, or distributed liability, appear as promising tools, particularly in Asian systems that favor legislative experimentation and innovation. Finally, the idea of granting intelligent robots electronic legal personality remains largely marginalized and contested, due to both its ethical implications and its compatibility with the fundamental principles of law.*

Keywords: *Artificial intelligence, Intelligent robot, Legal liability, Challenges, Reform*

Artificial Intelligence and Contracting: AI as a Tool or a Contracting Party?

Original Scientific Article

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Abstract: *In legal theory, particularly within the domain of private law theory, it is generally considered that the concept of "personhood" denotes an entity capable of holding rights, duties and obligations, exercising moral and legal agency, and acting on the basis of its own rationality and self-awareness. Although the concept of artificial intelligence (AI) as a legal person is being reconsidered, its lack of consciousness, rational autonomy, and self-recognition means that AI does not currently qualify as a legal person and therefore cannot independently enter into valid contracts. Nevertheless, AI has become an increasingly important instrument in the contractual process. It can rapidly collect, process, and synthesize data that may be critical to negotiations and decision-making, tasks which would otherwise demand significant human time, expertise, and financial resources. Properly prompted, AI can perform in seconds what a human agent might accomplish only after extended effort. Despite these advantages, it remains prudent for a human agent to review AI-generated documents to identify potential errors or shortcomings resulting from the technology's current limitations. Over time, however, AI systems will likely advance to a point where they can be relied upon to conclude contracts without creating legal defects that could affect their validity. In fact, there are already real-world examples where AI has played a central role in contract formation and disputes arising from it. For example, a legal technology platform has reported that two AI systems autonomously negotiated and executed a non-disclosure agreement, with human parties merely signing the final document. In another case, plaintiffs alleged that a website's AI system suspended them from its marketplace, causing lost sales and triggering contractual disputes. These examples illustrate that AI's role in contracting is expanding and will likely continue to evolve. As a result, some legal scholars and policymakers have proposed the concept of granting certain advanced AI systems and robots limited "electronic personhood." Such a status could give AI specific legal rights and obligations, including liability for damages. If implemented, such a framework could enable AI to function as an independent contracting party, marking a significant transformation in both contract law and the broader theory of legal personhood.*

Keywords: *Artificial intelligence (AI), Contracting party, Legal personhood, Electronic personhood*

Transforming Legal Systems through AI: Between Technological Innovation and Human Rights Safeguards

Scientific review article

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Abstract: *The integration of artificial intelligence (AI) into legal systems is increasingly reshaping the landscape of law, justice, and governance. Over the last decade, AI technologies have moved from experimental applications to real-world deployment in areas such as judicial decision-making, legal research, document review, case prediction, and court administration. These innovations promise to enhance efficiency, accuracy, and accessibility, offering tools that can support judges, lawyers, and policymakers in addressing the complexity and volume of contemporary legal challenges. By automating routine tasks, supporting predictive analytics, and facilitating data-driven insights, AI has the potential to streamline court procedures, reduce systemic backlogs, and ensure faster delivery of justice. Such benefits are particularly relevant in overburdened jurisdictions where delays undermine the right to a fair trial and weaken public confidence in the legal order. This paper critically examines the dual nature of AI's impact on legal systems, highlighting both its transformative potential and the significant ethical and legal risks it entails. It argues that the adoption of AI in law cannot be approached merely as a technical innovation but must be framed as a governance challenge requiring normative safeguards. Effective frameworks must be rooted in principles of transparency, explainability, accountability, and robust human oversight. Moreover, the integration of AI into justice systems should be accompanied by impact assessments, continuous monitoring, and clear liability mechanisms to prevent rights violations and ensure compliance with international human rights standards. Ultimately, the study advocates for a balanced approach in which technological innovation coexists with strong legal and ethical safeguards. Rather than replacing human judgment, AI should serve as an assistive instrument that enhances judicial reasoning while preserving human dignity, autonomy, and equality before the law. By embedding AI within a principled governance architecture, societies can unlock its potential to contribute to smarter, fairer, and more trustworthy legal systems. This balanced vision, situated between innovation and rights protection, underscores the urgent need for interdisciplinary dialogue among legal scholars, technologists, ethicists, and policymakers in shaping the future of law in the age of AI.*

Keywords: *Artificial Intelligence, Legal systems, Judicial decision-making, Human rights, Rule of law, Transparency, Accountability, Technological innovation*

Copyright Infringement in AI Inputs and Outputs: A Comparative Approach

Original Scientific Article

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Abstract: *The deployment of Artificial Intelligence (AI) in creative domains has intensified debates over copyright infringement in both the inputs used for training and the outputs produced by generative systems. This paper undertakes a comparative legal analysis of these issues, focusing on the divergent approaches of the United States, the European Union, and select international frameworks. With respect to inputs, it interrogates the legality of large-scale text and data mining practices, assessing the applicability of doctrines such as fair use under U.S. law and the text and data mining exceptions codified in Articles 3 and 4 of the EU Directive on Copyright in the Digital Single Market (DSM Directive). On the output side, the paper evaluates whether AI-generated works can infringe existing copyright protections through substantial similarity or derivative use, and whether such outputs are themselves eligible for protection given requirements of human authorship and originality. The analysis highlights the tensions between transformative use and market substitution, the uncertain threshold of creativity in machine-generated content, and the regulatory gap between innovation policy and traditional copyright regimes. By situating these issues within a comparative framework, the study demonstrates that while the U.S. system leans on flexible judicial interpretation, the EU pursues more prescriptive statutory solutions, each with distinct implications for creators, developers, and policymakers. The paper concludes that a harmonized yet adaptive framework is necessary to balance the promotion of technological progress with the safeguarding of authors' rights in an era of algorithmic creativity.*

Keywords: *AI copyright, Text and data mining, Comparative legal analysis*

Artificial Intelligence as a Tool for Efficient Implementation of the REACH Regulation in Serbia

Scientific review article

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Abstract: *The REACH Regulation has introduced a fundamental shift in chemical governance by transferring the burden of proof from regulators to industry (business entities). This approach requires producers and importers to provide comprehensive evidence of chemical safety before substances are allowed on the EU market. While EU Member States have developed strong institutional and technical capacities to manage REACH obligations, candidate countries such as Serbia face significant structural and resource limitations. Artificial intelligence, as a rapidly evolving technology, offers solutions that can help bridge these gaps. AI can process large datasets, support predictive toxicology, and automate compliance monitoring, thereby improving efficiency and reducing costs. This paper examines the specific challenges Serbia faces in implementing REACH and evaluates the potential role of AI as an enabling tool in this process.*

Keywords: *Artificial Intelligence, REACH Regulation, Serbia, Regulatory compliance, Sustainable development, Predictive toxicology, Environmental protection, European integration*

Are There Artificial Intelligence Databases

Scientific review article

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Abstract: *Artificial intelligence systems have been the dominant technology in recent years, which has had an intensive impact on the relations regulated by intellectual property law. Databases, for their part, as a modern high-tech product of growing importance in the information society, enjoy legal protection under Directive 96/9/EC of 11 March 1996 on the legal protection of databases. They are the subject of intellectual property both in European Union law and in the law of the Member States. Proceeding from the definition in the Database Directive and the technical nature of the two phenomena, considering possible hypotheses and existing solutions, this study aims to answer the research question whether „AI databases" can be protected subject matter under the two established protection regimes, namely, copyright and especially sui generis right. The two main forms of legal life - legal doctrine and judicial practice, together with the application of an interdisciplinary approach, serve to clarify the ‚legal protection - databases - AI' relationship in EU law. The analysis justifies the need for the expression „artificial intelligence databases" used in legal literature to accurately reflect the characteristics of the protected object at the current historical moment.*

Keywords: *Databases, Artificial intelligence systems, Sui generis right, Directive 96/9/EC*

AI as a Decision Support Tool in Prostate Cancer Diagnosis: A Literature Review and Trend Analysis

Scientific review article

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Abstract: *Advances in AI (AI) have greatly enhanced prostate cancer diagnosis (PCaD). This systematic review (2022–2025) evaluates recent developments, techniques, and the effectiveness of AI-based decision support tools. Convolutional neural networks and generative adversarial networks (GANs) are the most prevalent methods, applied to MRI image classification, lesion detection, segmentation, and image enhancement. These approaches improve lesion localisation, diagnostic precision, and consistency among radiologists and pathologists, while multi-modal systems help reduce unnecessary interventions. Despite progress, key challenges include data heterogeneity, limited model generalisability, and lack of interpretability. Future directions highlight AI-driven risk stratification, streamlined MRI protocols, and integrated imaging pathways. Overall, AI offers promising tools for earlier detection and more personalised, efficient, and patient-centred management of prostate cancer.*

Keywords: *AI, Prostate cancer, Diagnosis, Decision support tool*

Voltage Stability Analysis in Power Distribution Networks for Connecting Renewable Energy Sources

Scientific review article

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Abstract: *Voltage stability in the electrical distribution network is the ability of the electrical network to absorb voltage shocks and return to a state of equilibrium after voltage variations caused by the equipment in the grid or by external factors.*

A distribution system that loses its stability is a system that can no longer supply users and is consequently a system that will collapse. The collapse of an electrical energy distribution network occurs as a result of overloads at the consumption level, as a result of a major fault or insufficient reactive power in the system.

The collapse can occur in a part of the electrical network or in the entire distribution network, depending on the parameters of the network and the nodes at the time of the unwanted event.

The collapse of the system may begin with slight voltage drops in the network, but following a voltage variation which are of three kinds: fast, medium or slow. The voltages in the network nodes may suffer quick voltage drops that ultimately lead to the collapse of the system, or the system collapse may occur as a result of cascading unwanted events.

This article analyses theoretical aspects regarding voltage stability in electrical networks and practical results of simulating the real parameters and behavior of an industrial park near Brașov in various states and power levels. The voltage stability for the nodes of a distribution network in the industrial park will be studied using appropriate calculation methods and programs, starting from the current situation where consumption is about 40% of the approved power and the distribution capacity of the connection cables and until reaching the maximum distribution capacity in both consumer and producer modes.

The information resulting from the voltage stability analysis could be input data for a voltage regulator based on fuzzy theory to regulate the voltage and, in this way, could regulate the voltage online in the power grid.

Keywords: *Voltage stability, Power distribution, Renewable sources, Bifurcation theory, Fuzzy*

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