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The Conference Proceedings bring together interdisciplinary research on artificial intelligence, digital transformation, entrepreneurship, education, human capital, and sustainable development. The contributions examine how emerging technologies and innovation are transforming organizations, businesses, educational systems, and society. The first part focuses on artificial intelligence, digital technologies, smart cities, marketing analytics, consumer behavior, and AgriTech as drivers of organizational and economic transformation. The second part addresses entrepreneurship, business innovation, management, SME development, commercialization of university research, leadership, marketing, and adaptive approaches to enterprise performance. The third part explores education, human capital, and social innovation, highlighting lifelong learning, future skills, entrepreneurship education, AI in education, digital competence, resilience, and the transformation of learning in times of uncertainty. The fourth part focuses on sustainable development, governance, law, and sectoral transformation, including ESG principles, public-sector innovation, data and intellectual property protection, environmental responsibility, sustainability reporting, and human capital development. Overall, the contributions demonstrate that successful transformation requires the integration of technological innovation with entrepreneurial capabilities, human-centered education, adaptive management, responsible governance, and sustainable development.

Keywords: Artificial Intelligence; Digital Transformation; Innovation; Entrepreneurship; Business Management; Smart Technologies; Marketing; SMEs; Human Capital; Future Skills; Higher Education; Lifelong Learning; Social Innovation; Sustainability; ESG; Governance; Resilience; Digitalization; Sustainable Development

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INTRODUCTION

The world is changing fast in the 21st century in terms of technology, economy and society. AI, digital technologies, innovation and sustainability are having a growing impact on the way organizations work, businesses compete, schools and universities are built, and societies react to uncertainty. This is an environment of change and the necessity to grasp the forces that will drive future economic and social development and this is why this collection is titled, FUTURE DRIVE.

The essays in the Proceedings discuss the changes of modern economies and organizations in four intertwined realms: Artificial Intelligence and Digital Technologies, Entrepreneurship and Business Innovation, Education and Human Capital, and Sustainable development, Governance, Law, and Sectoral Transformation. The regions show that technological advancement must be seen in terms of organizational capabilities, human development, institutional adaptation and sustainability.

The first part is about the Artificial Intelligence, Digital Technologies and Smart Transformation. The contributions cover the themes of AI-driven organizational transformation, marketing analytics, consumer behavior, innovation hubs, smart cities, information potential, industrial technologies and AgriTech. Special focus is placed on the application of AI, machine learning, data-based decision making, and digital platforms in order to enhance organizational efficiency and competitiveness, resource management, and innovation.

The second area is on entrepreneurship, business innovation and management. The studies cover the adoption of AI by SMEs, innovation competences, entrepreneurial ecosystems in HE, commercialization of HE researches, transformation of leadership, innovation potential, adaptive marketing, innovation activity, and cost management. The contributions highlight the role of entrepreneurial skills, the involvement of universities in business, adaptive management, and innovation ecosystems in assisting business development in uncertain environments.

The third part focuses on the themes of education, human capital and social innovation. The contributions address the concepts of lifelong learning, future skills, entrepreneurship education, sustainable development education, AI in education, digital competence education, support for hybrid learning, self-management, professional development, and AI-driven management in education and social services. The studies show how increasingly critical adaptability, resilience, digital literacy, entrepreneurial thinking and lifelong learning have become for people and institutions in a changing world.

The fourth part is dedicated to sustainable development, governance, law and sectoral transformation. It gathers research into the fields of corporate sustainability, public-sector innovation, adaptive financial management, data protection, IP, ESG-driven modernization, reporting on sustainability, environmental responsibility, migrant professional skills and pharmaceutical innovation. These contributions highlight the importance of effective governance, legal frameworks, environmental responsibility and human capital in driving the sustainable and resilient development.

The overall impact of the FUTURE DRIVE contributions indicates that the future is not a by-product of technology, but a result of the synergy between technological innovation, entrepreneurship, human capital, institutional capacity and sustainability. The Proceedings offer a multidisciplinary approach on innovation and adaptation in the context of organizations, businesses, educational institutions and public systems to change, grow, or set-up conditions for resilient and sustainable development.

The collection aims at exemplifying the ongoing academic and professional debate on the future of innovation, management, education and society across various disciplines, countries and institutional environments.

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Section 1. Artificial Intelligence, Digital Technologies And Smart Transformation

ARTIFICIAL INTELLIGENCE AND INTERNAL MARKETING AS DRIVERS OF ORGANIZATIONAL TRANSFORMATION

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Abstract

Objectives. This study will introduce and confirm an integrated conceptual model of how organizational transformation occurs when artificial intelligence (AI), internal marketing, customer purchasing decisions, digital transformation, and organizational capabilities are brought together through their combined effect on innovation and business resilience within the rapid rate of technological change.

Methods. This study is based on methods of comparative and structural analysis, conceptual modeling, and case study. Empirical evidence used in this research is obtained from digital market analytics (SimilarWeb and Semrush), customer surveys, and GeminiNotebookLM tools for building a model based on research materials.

Results. The findings indicate that organisation's sustainable transformation is achieved through the integration of internal organisational capabilities along with digital technology adoption, and not solely the implementation of digital technology. Empirical evidence also supports that AI-driven analytics are useful for improving demand forecasting, customer segmentation, product portfolio optimization, creating personalized value for customers and improving how quickly management responds across the retail and education and service industries. Studies of consumer behaviour indicate that both digital engagement and AI-based recommendations will have a significant impact on consumer choices. Research also suggests that as a result of diverse types of consumers exhibiting different behaviours, it will be necessary to implement diverse marketing strategies. An integrated conceptual model has been developed to link external reputation factors, internal marketing, organisational capabilities and AI-driven strategic management to create ongoing communication and feedback. The model being developed includes four linked layers; the data/infrastructure layer, the analytics/AI layer, the management/decision-making layer, and the KPI/monitoring layer which create an adaptive cycle of continuous improving an organisation's performance or effectiveness. Moreover, research findings show that organisations that leverage technology along with employee participation and cross-functional teamwork in sharing knowledge and continuous learning also achieve a high level of innovation performance and productivity and create value for customers, and are able to maintain long-term competitiveness.

Conclusions. The study concludes that the competition of tomorrow will rely more heavily on the blend of technological abilities and organisational transformation efforts and the transformation of human resources. AI needs to be delivered as a fully integrated decision-support system through the organization rather than as an isolated technology solution.

Keywords: Artificial Intelligence; Digital Transformation; Internal Marketing; Organizational Innovations; Strategic Marketing.

ARTIFICIAL INTELLIGENCE AND SOCIAL INNOVATION FOR ENHANCING HEALTHCARE ACCESSIBILITY IN PAKISTAN

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Abstract

Objectives. Artificial Intelligence is a technology that has significant potential in addressing the unequal access to healthcare facilities in Pakistan, particularly in rural and underserved areas where basic healthcare facilities, trained professionals, as well as diagnostic services remain limited. This study is based on the examination of AI-driven innovations in healthcare accessibility in Pakistan, with particular emphasis on collaboration and knowledge transfer, as well as the innovation ecosystem as the appropriate mechanism for supporting the sustainable transformation of healthcare. The study aims to provide a critical assessment of how AI-powered telemedicine and predictive diagnostics, as well as AI-enabled diagnostic tools, can help improve access to healthcare services

Methodologies. For the study, a mixed-methods approach was adopted, which combines surveys targeting healthcare professionals and patients in rural areas with secondary data for the study obtained from published healthcare reports by the government and existing studies available on AI applications. The analysis in the study considered the effectiveness of AI technologies and healthcare accessibility, as well as patient satisfaction, diagnostic accuracy, and access to essential healthcare services. The proposed implementation process in the study incorporated stakeholder engagement and policy, as well as regulatory support, pilot testing, and AI model deployment.

Results. The findings of the study provided an effective demonstration of the considerable potential for AI to improve healthcare accessibility. AI-Powered telemedicine platforms were mainly associated with a rise of 40% in healthcare access to rural areas, while patient satisfaction with the AI-supported telemedicine services reached a level of 85%. Other factors, like AI-based predictive diagnostic tools, achieved an accuracy rate of 80% in detecting chronic diseases, which include diabetes and hypertension, while 35% of previously underserved areas gained proper access to essential healthcare services through the AI-enabled diagnostic tools.

Conclusion. The study concludes that AI can provide a significant contribution in reducing the healthcare inequalities presented in Pakistan, when properly supported by effective collaboration and knowledge transfer as well as technological investment and stakeholder engagement in the process. Strengthening partnerships among the different healthcare institutions and the government, as well as technology providers and researchers, can help support reasonable innovation in the field.

Keywords: Artificial Intelligence; Healthcare Accessibility; Pakistan; Technology Integration; Public Health

DIGITAL INNOVATION HUBS AS CATALYSTS FOR SME TRANSFORMATION: THE EUNITED DIGITAL HUB CASE

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Abstract

Objectives. The research focuses on the role of Digital Innovation Hubs (DIHs) to drive the digital transformation of small and medium-sized enterprises (SMEs). We specifically focus on the EUNITED Digital Hub in Ukraine and how it combines technological assistance, skills development, investment opportunities and networking. This study aims to provide some insight on how those kinds of support can overcome the major obstacles to business digitalisation.

Methodology. This is a qualitative case study. The research is based on information available about the EUNITED Digital Hub on the internet in terms of its target groups, priority technologies, consortium structure, and services. The analysis focuses on four aspects: Test Before Invest, Skills & Training, Support to Find Investment and Innovation Ecosystem & Networking. They were examined in terms of content and relationships for SME digital transformation.

Key Findings and Results. The EUNITED model addresses four interconnected aspects of digitalisation. Test Before Invest helps businesses assess technologies before investing. Skills & Training is for those who must learn and use new technologies. Investment support is used in response to financial hurdles and Innovation Ecosystem & Networking connects businesses with technology companies, research institutions, public institutions and other partners. Combined with these services, the Hub will play a larger role than a technology provider as it forms an intermediary place where technological knowledge, business needs, skills and collaboration opportunities exist. This case shows that digitalisation is not only about access to technology but also skills and innovation collaborations.

Conclusions. The EUNITED case indicates that the DIH model can be used to assist SME transformation through the use of an integrated service model. And its combination of technology access, competence development, investment opportunities and networking makes DIHs relevant to knowledge transfer, business–science cooperation and the establishment of innovation ecosystems in Ukraine.

Keywords: Digital Innovation Hubs; Digital Transformation; Innovation Ecosystems; Knowledge Transfer; SMEs.

ANALYSIS OF CONSUMER BEHAVIOR TRANSFORMATIONS IN THE CONTEXT OF DIGITALIZATION

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Abstract

Introduction. Digitalization is transforming consumer behavior by changing how needs are formed, information is searched for, alternatives are evaluated, decisions are made, and consumers interact with brands. The growing adoption of artificial intelligence (AI) marks a new stage in this transformation, as AI is shifting from a business automation tool to an active intermediary in consumer decision-making. The aim of the study is to systematize the key transformations in consumer behavior driven by digitalization and AI and to identify key areas for adapting marketing strategies.

Methodology. The study applies a systematic approach, analysis and synthesis of scientific and analytical sources, comparative analysis of traditional and digital consumer behavior models, and generalization of current AI practices.

Results. The results demonstrate the rapid integration of AI into everyday consumer behavior. According to Deloitte, 53% of consumers used or experimented with generative AI in 2025 (with 38% in 2024), while the share of regular users nearly doubled to 20%. In 2026, approximately one-quarter of consumers use generative AI when shopping [3]. The impact of AI extends beyond information search. Six key transformations can be identified across the stages of consumer decision-making process [1; 2], contributing to the emergence of an AI-mediated model of consumer behavior (Fig. 1):

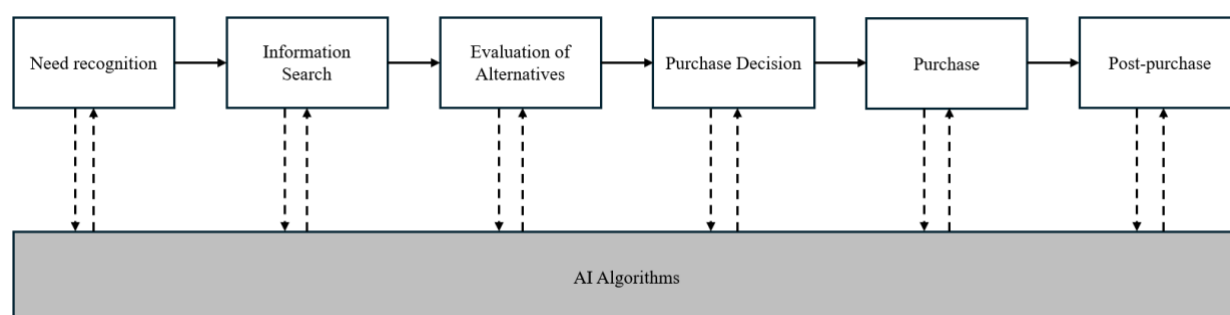


Figure 1. Consumer Decision-Making Model. Developed by the author

1. Need recognition. Personalized algorithms can analyze previous behavior and contextual data, predict consumer interests, create individualized information environments, and influence the formation of needs.
2. Information search. Consumers increasingly rely on AI-generated responses that synthesize information from multiple sources rather than searching and analyzing by themselves.
3. Evaluation of alternatives. Algorithms pre-select alternatives, narrowing the range of personalized options for consumers consideration.
4. Decision-making. Consumers partially delegate cognitive functions to AI, including product comparison, review summarization, evaluation, and recommendation generation.
5. Purchase. Conversational commerce and AI agents allow consumers to delegate parts of the purchasing process to AI, from product selection to transaction execution.
6. Post-purchase behavior. AI personalizes customer service, anticipates needs, optimizes timings of relevant offers, and encourages repeat purchases. [3-6]

Conclusions. The traditional “brand-consumer” relationship is evolving into a “brand-algorithm-consumer” model. For businesses, this requires moving beyond managing individual touchpoints along the consumer journey toward managing interactions between brands, AI systems, and consumers. Key priorities include AI-driven personalization, optimizing brand information for generative AI systems, conversational commerce, predictive analytics, reliable structured product data, and building consumer trust through transparent and ethical AI use.

Keywords: Artificial Intelligence; Consumer Behavior; Digitalization; Personalization.

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INNOVATIVE TECHNOLOGIES FOR REDUCING THE IMPACT OF SKEWING ON BRIDGE CRANES THROUGH PARAMETER RANKING OF THE “CRANE–RAIL” SYSTEM

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Abstract

Objectives. The purpose of the study is to define and implement innovative technologies aimed at reducing the impact of skewing in bridge cranes by systematically ranking the parameters of the “crane–rail” interaction. The relevance of the topic is determined by the high level of technical and economic risks that arise during the operation of bridge cranes functioning in complex industrial environments.

Methodology. The research methods are based on the comprehensive use of mathematical modeling, system analysis, and innovative approaches to technical management.

Results. The results of the study showed that systematic ranking of “crane–rail” parameters makes it possible to identify the most significant factors determining the stability of bridge crane operation. These factors include the accuracy of rail track geometry, uniformity of load distribution on running mechanisms, quality of technical maintenance, and timeliness of diagnostics. Structural skewing leads to increased loads on nodes and mechanisms, reduced equipment lifespan, higher probability of emergency situations, and significant financial losses. The introduction of innovative monitoring technologies and digital transformation of technical management ensures a reduction in skewing levels by 20–30 percent, as confirmed by experimental data. The effect consists in reducing repair and maintenance costs, increasing production process efficiency, and lowering the risks of emergency shutdowns. The research results also confirm the possibility of integrating the parameter ranking system into digital platforms for industrial asset management, opening prospects for further automation and intellectualization of production processes.

Conclusions. The conclusions of the study indicate that innovative technologies for reducing the impact of skewing on bridge cranes allow targeted management of the most critical factors determining equipment stability. The study opens prospects for further development of innovative technologies in mechanical engineering and industrial operation, contributing to the competitiveness of enterprises in the modern digital economy.

Keywords: innovative technologies, bridge cranes, skewing, “crane–rail” system, parameter ranking.

THE IMPACT OF AN ENTERPRISE'S INFORMATION POTENTIAL ON THE QUALITY OF SCIENTIFIC RESEARCH

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Abstract

The study is devoted to identifying the patterns of influence of information resources, technologies, and the competencies of innovative personnel on the effectiveness and quality of the enterprise's research activities.

A systemic approach is used in the study, which allows the information potential to be considered as an integral economic category.

The results of the study make it possible to assert that the information potential of an enterprise is an important factor in ensuring high-quality scientific research. This conclusion is supported by the following points:

1. *Resource dimension.* The availability of modern databases, analytical systems, and access to global information networks significantly increases the accuracy and completeness of research materials. This helps avoid duplication, ensures the representativeness of samples, and supports the formation of new hypotheses.
2. *Technical-technological component.* The use of digital platforms, artificial intelligence systems, and big data processing tools ensures the speed and depth of research, which, in our view, directly affects the quality of conclusions.
3. *Intellectual and personnel potential.* The competence of staff in the field of information technology determines the enterprise's ability to integrate data into research processes. Interdisciplinary teams combining scientists, analysts, and managers create a synergistic effect.
4. *Organizational and managerial aspect.* An effective system of managing information flows allows optimization of research processes, reduction of time and resource costs, and ensures transparency and quality control.

An important and original result, in our opinion, is the formation of the concept of an "enterprise information ecosystem," which considers information potential as a dynamic system of interaction between data, technologies, and employees. Such an ecosystem creates conditions for the continuous renewal of knowledge, which enhances the quality and significance of the scientific novelty of research. The study also showed that a high level of information potential contributes to the formation of a culture of evidence-based practice: research results are based on verified data, which increases their credibility among partners and the scientific community.

It is concluded that the information potential of an enterprise is a fundamental factor determining the quality of scientific research. Its development ensures the accuracy, novelty, and practical relevance of results, promotes the integration of the enterprise into the global scientific space, and creates strategic advantages.

Keywords: information potential; scientific research quality; digital technologies; interdisciplinary teams; information ecosystem

AI AND MACHINE LEARNING IN MARKETING ANALYTICS: FROM MATHEMATICAL PROBLEM FORMULATION TO MARKETING DECISIONS

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Abstract

Objectives. The increasing complexity and volume of marketing data make traditional analytics methods less effective, highlighting the need for efficient tools. Artificial intelligence (AI) and machine learning (ML) methods enable faster and automated data processing. However, the choice of appropriate models and algorithms depends on the specific marketing problem and its mathematical formulation. This study systematizes AI and ML approaches for key marketing analytics problems.

Methods. The study uses conceptual analysis of scientific literature and practical applications of machine learning models and algorithms, including K-means, logistic regression, Random Forest, XGBoost, and deep learning models. Approaches were classified by application area and compared for capabilities, advantages, and limitations, then organized by relevant marketing analytics problems.

Results. The analysis identified relationships between specific marketing problems, their mathematical formulations, and the corresponding AI/ML approaches, models, and algorithms. Customer segmentation is commonly formulated as a clustering problem, with K-means among the most widely used algorithms. Customer churn and marketing campaign response prediction are typically classification problems handled by logistic regression, Random Forest, XGBoost, and deep learning. Ensemble models and neural networks are among the approaches used to predict customer value and demand. At the same time, personalized recommendations rely on preference prediction and ranking using collaborative filtering, matrix factorization, and neural recommender models. Customer review analysis can be formulated as a sentiment analysis or text classification problem and addressed using support vector machines (SVMs), neural networks, and transformer-based models. For pricing and resource allocation, predictive ML models are combined with optimization techniques. The findings indicate that model selection should be determined not only by predictive accuracy but also by data characteristics, result interpretability, and practical applicability. Based on these relationships, we developed a conceptual framework linking marketing problems, data, mathematical formulations, AI/ML methods and models, analytical outputs, and corresponding marketing decisions.

Conclusions. The findings suggest that effective AI/ML application in marketing analytics requires aligning model capabilities with the problem's nature and the practical value of the resulting insights. The proposed framework can support informed model selection by considering predictive capabilities, interpretability, and practical applicability.

Keywords: Artificial Intelligence; Machine Learning; Marketing Analytics; Mathematical Problem Formulation; Predictive Models

RESULTS OF THE SMART CITY ASSESSMENT

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Abstract

Objectives. Cities cover approximately 3% of the Earth's surface but account for up to 72% of global greenhouse gas emissions, and are growing rapidly — by 2050, almost 85% of Europeans are expected to live in urban areas. In response, countries around the world are actively working to implement Smart City systems, aiming to improve the quality of life of local residents and ensure economic, social, and environmental sustainability.

Methodology. The Smart City Index of regional capitals in Ukraine and the Slovak Republic was assessed using an original methodology based on official information available on the cities' websites.

Key Findings and Results. The analysis showed that Kyiv and Lviv are the most advanced in terms of digitalization, with comprehensive Smart City systems, mobile applications for residents, electronic services, and urban monitoring systems. As an example, the city of Vinnytsia achieved an overall Smart City Index of 6.49 out of 10, corresponding to a medium-to-high level.

Conclusions. Ukrainian cities are gradually transitioning to the "Smart City" concept, using modern information technologies to improve management efficiency and the quality of life of the population. The development and standardization of "Smart City" provisions could be implemented as a national pilot project.

Keywords: digitalization, methodology, project, smart cities

ECONOMIC AND MANAGERIAL IMPACTS OF AGRITECH ADOPTION IN MODERN AGRICULTURAL ENTERPRISES

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Abstract

Objectives. The study analyzes the economic and managerial effects of AgriTech implementation in current agricultural businesses and confirm the contribution of digital technologies to the efficiency of agricultural operations, the management of natural resources, productivity, competitiveness and sustainability of agricultural enterprises in a context of economic uncertainty and technological changes.

Methods. Analysis, comparison, generalization, systematization, managerial and economic methods of evaluation of the use of agricultural technologies are used in the research. Precision Agriculture, Internet of Things technologies, Artificial Intelligence, Remote Sensing, Farm Management Information Systems, Agricultural Robotic Systems, and Data-driven decision making are emphasized. Indicators of economic efficiency, resource utilization, productivity, optimization of costs, managerial performance are also taken into account.

Results. The use of AgriTech is seen as one of the key factors in the digital transformation of agribusinesses and a critical management tool to optimize economic and managerial performance. With the advent of modern agriculture technologies, enterprises can gather, process, and analyze vast amounts of operational and environmental data to help them make better managerial decisions and allocate land, labor, water, energy, fertilisers and other production resources more effectively. Precision agriculture technologies help to apply agricultural inputs in a differentiated way, cut down on unnecessary costs, and use agricultural resources more efficiently. In addition, the use of monitoring systems and remote sensing technologies, which are based on the Internet of Things, allows for better operational control over the crops, machines, soil and weather risks, while the Farm Management Information Systems help to integrate production, financial, logistical and analytical information. The use of artificial intelligence and predictive analytics opens the door to further opportunities for yield prediction, risk assessment, resource optimization and strategic planning. At the economic level, adoption of AgriTech can help to boost labor efficiency, land productivity, reduction of operating costs, and enhance efficiency in the use of resources to ensure agricultural enterprises are more competitive. The economic impact, however, is contingent upon the size of the enterprise, the level of investment capacity, and technological compatibility, the skills of the workforce, as well as the level of infrastructure development and the ability of the management to incorporate digital technologies into the existing business processes. The top challenges to AgriTech adoption are: high upfront investment, lack of digital infrastructure, access to financing, lack of qualified staff, technological complexity, data challenges, and ROI uncertainty.

Conclusions. Successful implementation of AgriTech will necessitate a holistic managerial strategy that encompasses technological innovation, economic evaluation, strategic planning, human resource development, risk management and ongoing performance monitoring. Digital agricultural

technologies must be considered as more than just technical solutions, but as tools for agricultural management, which can drive changes in production systems, improve resource use efficiency, lower production costs, and boost the competitiveness and sustainability of farms. Well-designed investment assessment systems, digital skills, data-based management tools and organizational skills can boost the economic returns of AgriTech implementation and help sustain the growth of modern agricultural businesses.

Keywords: AgriTech; agricultural enterprises; digital transformation; farm management; precision agriculture; economic efficiency; resource management; artificial intelligence; digitalization; agricultural innovation.

Section 2. Entrepreneurship, Business Innovation and Management

ARTIFICIAL INTELLIGENCE ADOPTION AMONG SMALL AND MEDIUM-SIZED ENTERPRISES IN GHANA: OPPORTUNITIES, CHALLENGES, AND STRATEGIES FOR SUSTAINABLE BUSINESS GROWTH

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Abstract

Small and medium-sized enterprises (SMEs) are essential contributors to Ghana's economic development through job creation, innovation, and local economic growth. However, many SMEs continue to face challenges including limited resources, inefficient business processes, difficulties in customer engagement, and increasing competition in the digital economy.

The rapid advancement of Artificial Intelligence (AI) presents new opportunities for SMEs to improve productivity, strengthen marketing strategies, enhance customer service, and support better business decision-making. Despite these opportunities, the adoption of AI among SMEs in Ghana remains influenced by factors such as limited digital skills, cost barriers, infrastructure challenges, and concerns about data privacy.

This research examines the adoption of Artificial Intelligence tools among SMEs in Ghana, focusing on awareness levels, current usage patterns, perceived benefits, challenges, and opportunities for future adoption. The study will employ a survey-based research approach targeting SME owners and managers in Accra, Ghana. Data will be collected through structured questionnaires and analyzed to identify key trends influencing AI adoption among small businesses.

The study aims to provide practical insights into how SMEs can use affordable AI solutions to improve operational efficiency, customer relationships, marketing performance, and competitiveness. It also seeks to identify strategies that can support responsible and effective AI adoption among Ghanaian entrepreneurs.

The expected contribution of this research is to support discussions on digital transformation and entrepreneurship by highlighting the role of emerging technologies in enabling sustainable business growth. The findings will provide recommendations for entrepreneurs, policymakers, and technology providers on how to encourage greater AI adoption among SMEs in Ghana.

Keywords: Artificial Intelligence, Small and Medium Enterprises, Entrepreneurship, Digital Transformation, Ghana, Business Innovation

DIAGNOSING INNOVATION CAPABILITIES IN LAGGING SMEs: A HIERARCHICAL MULTICRITERIA ORDINAL CLASSIFICATION FRAMEWORK

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Abstract

Small and medium-sized enterprises (SMEs) play a critical role in employment, regional development, and productive value chains, yet firms operating in vulnerable or lagging sectors frequently face significant constraints in developing sustained innovation capabilities. Existing support mechanisms often rely on general indicators or aggregate assessments that provide limited guidance regarding which organizational capabilities require priority intervention. This study aims to develop a hierarchical multicriteria ordinal classification framework for diagnosing innovation capabilities in SMEs and identifying differentiated maturity profiles. The proposed approach combines a structured review of recent academic literature and institutional sources with the hierarchical representation of innovation capabilities and the development/adaptation of ordinal multicriteria classification methods from the Multicriteria Decision Aiding methodology. The framework is designed to accommodate heterogeneous, qualitative, ordinal, and potentially imprecise information. Rather than producing a single compensatory innovation score, the model assigns SMEs to ordered maturity classes while preserving information on performance across specific capability dimensions. Current conceptual results identify six first-level dimensions relevant to the diagnosis: innovation strategy and management; knowledge and organizational learning; market orientation and customer knowledge; technology and digitalization; organizational structure and culture; and external networks and collaboration. These dimensions provide the basis for a hierarchical criteria structure. Four ordered diagnostic classes are also proposed: incipient, basic, developing, and consolidated innovation capability, together with reference-profile logic for determining class assignments. The hierarchical structure allows both an overall classification and dimension-specific diagnoses, making it possible to reveal critical weaknesses that could otherwise be masked by aggregate indicators. The proposed framework offers a transparent and transferable basis for targeting innovation-support

initiatives according to the actual capability profile of each SME. Although initially motivated by vulnerable and lagging productive sectors in Coahuila, Mexico, the model is designed for broader application in regional innovation ecosystems. Its expected contribution is to improve the prioritization of capacity-building, university–industry collaboration, and innovation-policy interventions aimed at SMEs with heterogeneous development needs.

Keywords: Innovation capabilities; Multicriteria decision analysis; Ordinal classification; SMEs

ENTREPRENEURIAL ECOSYSTEM IN HIGHER EDUCATION INSTITUTIONS: THE ALFRED NOBEL UNIVERSITY MODEL

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Abstract

Objectives. The full-scale war has significantly increased the need for innovative approaches to youth employment, entrepreneurship, and economic resilience in Ukraine. Higher education institutions can play an important role in addressing these challenges by moving beyond traditional education and becoming active elements of regional entrepreneurial and innovation ecosystems. This paper examines the experience of Alfred Nobel University (ANU) in Dnipro in developing an entrepreneurial ecosystem that connects higher education, young entrepreneurs, business organisations, civil society, and international partners. ANU – 35th in Entrepreneurial Spirit and 67th in Technology Development and Application in the World University Rankings for Innovation Foundation (WURI) 2025¹. The Strategy of ANU 2025–2030² identifies practice-oriented education and support for student entrepreneurship, the development of entrepreneurial skills, and the creation of a university business incubator as priority areas for development.

Methodology. The study combines a qualitative case study approach to examine the institutional model of the ANU entrepreneurial ecosystem with quantitative indicators that reveal the content of the model's effectiveness. Particular attention is given to activities aimed at strengthening entrepreneurial skills, leadership, innovation, project development and women's participation in entrepreneurship. A qualitative case-study approach is used to analyse the institutional model, stakeholder engagement mechanisms and outcomes of these initiatives. The study identifies several key elements of an effective university-based entrepreneurial ecosystem: integration of entrepreneurship into educational activities; practical learning and mentoring; cooperation with business and external entrepreneurial initiatives; support for youth and women; and international networking. Such an approach creates opportunities for knowledge exchange, innovation and business development while strengthening the University's contribution to regional resilience and recovery.

Key Findings and Results. The analysis focuses on ANU's engagement with entrepreneurship-oriented initiatives and programmes. Among them are "Diia. Business", "Young Entrepreneur", University Business School, as well as initiatives that cover over 6,710 entrepreneurs, community representatives and other target groups, who participated in educational programs, consultations, accelerators, trainings, seminars and public events during the period of 2026; Within the framework of the BLOOM project³, 36 events were held in 2.5 months, which covered over 796 participants, of

¹ Official website WURI — Ranking 2025. Retrieved from: <https://drive.google.com/file/d/1q7N4rbpGlr35BkCdGGAsg6JNAin9Zg0M/view> (accessed 20 August 2025).

² Strategy of Alfred Nobel University 2025–2030. Retrieved from: <https://duan.edu.ua/wp-content/uploads/strategy-anu-2025-2030-en.pdf> (accessed 21 August 2025).

³ Diia.Business | Dnipro. (2026, February 10). *Diia.Biznes | Dnipro — tsentr tyazhinnya biznesu, innovatsiy ta partnerstv rehionu*. [Diia.Business | Dnipro is the center of gravity of business, innovation and partnerships in the region]. Retrieved from: <https://diia-business-dnipro.com/news/informatsiia-1/diibiznes-dnipro-tsentrtiazinnia-biznesu-innovatsiy-ta-partnerstv-rehionu> (accessed 26 August 2025).

which 500 were unique; 55 women received support in the "Brave 3" program⁴, three of whom became semi-finalists of the national competition, and one participant received a grant of 1.5 million hryvnias⁵; 40 leaders and representatives of territorial communities of the Dnipropetrovsk region received training in the UNDP Circular Economy program; 270 individual consultations, 5 educational and partnership events on digitalization, artificial intelligence, export, marketing, financial literacy, grant financing and business development were held; The practice of assessing the digital maturity of enterprises and providing individual recommendations for digital transformation was introduced. "Career Elevator: Career, Freelance and Entrepreneurship Centers for the Restoration of Ukraine in Pereshchepinsk Community"⁶; 590 people in Kryvyi Rih Territorial Community. "Career Elevator: Career, Freelance and Entrepreneurship Centers for the Restoration of Ukraine in Kryvyi Rih Territorial Community"; 380 people in Pereshchepinsk Community. The study demonstrates how a combination of educational, mentoring and practical initiatives can support the development of entrepreneurial competences and transform students and young people from passive recipients of education into active participants in innovation and economic recovery.

Conclusions. The study concludes by proposing directions for further development of the ANU entrepreneurial ecosystem through international cooperation, particularly with Estonian higher education and innovation stakeholders. The study also identifies opportunities for developing joint research initiatives and future Horizon Europe projects focused on entrepreneurship, innovation, inclusive economic development and university–business cooperation.

Keywords: Entrepreneurial ecosystem; Higher education; Innovation; entrepreneurship; institutional model.

⁴ Office for Entrepreneurship and Export Development. (2025). *Vidvazhna 3: Digital evolution of business*. Diia.Business. Retrieved from: <https://www.vidvazhna3.com.ua/> (accessed 25 August 2025).

⁵ Diia.Business | Dnipro. (2026, July 20). *Veronika Sheheda — winner of the women's accelerator "Vidvazhna 3: Digital Evolution of Business"*. Retrieved from: <https://diia-business-dnipro.com/news/informatsiia-1/veronika-sheheda-peremozhnytsia-zinohoho-akseleratora-vidvazna-3-tsyfrova-evoliutsiia-biznesu> (accessed 25 August 2025).

⁶ Social Economy Ukraine. (2026). *Cherez ihry ta shtuchnyi intelekt: Yak "Kariernyi lift" vidkryvaie novi mozhlyvosti dlia meshkantsiv Dnipropetrovshchyny*. [Through games and artificial intelligence: How "Career Elevator" opens new opportunities for residents of Dnipropetrovsk region]. Retrieved from: <https://socialeconomy.org.ua/cherez-ihry-ta-shtuchnyi-intelekt-yak-ka/?utm> (accessed 25 August 2025).

FEATURES OF COMMERCIALIZATION OF UNIVERSITY SCIENTIFIC DEVELOPMENTS

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Abstract

The purpose of the study is a comprehensive examination of the processes of commercialization of university scientific developments to meet the needs of the innovation economy. Universities are increasingly becoming active participants in the knowledge market, where research results possess not only academic but also economic, that is, commercial value.

The study employed a comprehensive approach combining analytical and empirical methods. A comparative analysis of the most effective commercialization models was conducted, a systematic approach was applied to the study of university interaction with business and government organizations, and the method of expert evaluations was used to identify barriers and prospects for the use of university scientific developments.

The results of the study determined that successful commercialization of university developments is possible only under the condition of creating institutional infrastructure, which includes technology transfer centers, business incubators, and innovation hubs. Among the key success factors identified by the authors are the existence of an effective system of intellectual property protection, the development of commercial relations between universities and business, the formation of an entrepreneurial culture among students and researchers, and the use of information technologies to promote research results.

An important outcome of the study was the formation of the concept of the “university as an innovation brand”, which implies combining the university’s reputation with its market attractiveness. In our view, such an approach allows the university to position itself both as an educational institution and as a generator of technological solutions capable of competing in the technology market. The study results showed that the effectiveness of commercialization largely depends on the ability of universities to create interdisciplinary teams that unite researchers, marketers, lawyers, and innovation managers. Such synergy, in our opinion, ensures the transition from idea to finished product.

Special attention in the study was paid to transformational processes: university developments can be commercialized through the use of virtual laboratories, online platforms for technology testing, and the broad application of information technologies, which together ensure the rapid advancement of innovations to the market.

In conclusion, we can state that the commercialization of university scientific developments is a strategic direction for the development of higher education and science. It maximally contributes to the formation of new sources of funding, enhances the competitiveness of universities, and promotes their integration into the global innovation space.

Keywords: commercialization; university; innovation; technology; marketing; market

TRANSFORMATION OF LEADERSHIP MODELS IN THE ERA OF THE DEEPTech REVOLUTION AND EXISTENTIAL CRISES: THE CASE OF UKRAINE

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Abstract

Objectives. We synthesize agile goal-setting frameworks (Objectives and Key Results) with the Kotter and ADKAR change management models under extreme operational stress. The study evaluates enterprise adaptation tactics deployed by Ukrainian leaders facing martial law and ongoing systemic disruption.

Methodology. We applied qualitative cross-case analysis across 15 multinational corporations and 8 Ukrainian IT providers (2020–2026), combined with 23 semi-structured depth interviews with CEOs and CHROs.

Key Findings and Results. Large-scale existential crisis invalidates traditional multi-year strategic roadmaps. Data indicates that enterprise survival depends on decentralized continuity protocols rather than aggressive growth targets. Ukrainian organizations maintained operational stability through redundant infrastructure: satellite communications, backup energy sources, and weekly workflow re-evaluations. Delegating decision-making authority to autonomous units reduced response latency during acute disruptions. Direct, transparent executive communication significantly lowered workforce anxiety. Moreover, metrics tracking employee psychological well-being displaced standard financial KPIs as primary measures of managerial effectiveness. Human-centric leadership proved to be an operational necessity rather than a passive ethical choice.

Conclusions. We model crisis leadership through the "Three Horizons of Resilience": structural survival, operational adaptation, and systemic transformation. Immediate infrastructure stabilization must precede long-term strategic evolution.

Keywords: Leadership; Startup Ecosystems; Entrepreneurial Mindset; Open Innovation; Sustainability; Skills Development

FEATURES OF THE FORMATION AND ACTIVATION OF INNOVATIVE POTENTIAL

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Abstract

Objectives. The global innovation landscape establishes intricate interconnections among entrepreneurship, science, and society, wherein innovations are integral to fostering their future advancements. This interdependency underscores the pressing need for every nation and its respective regions to embrace an innovative trajectory of development. Accordingly, this study scrutinizes the fundamental principles shaping innovative potential and explores viable strategies for enhancing innovative growth.

Methodology. The research employs a combination of methods: morphological analysis – to dissect the structure of innovative potential and its constituents; logical generalization – to derive theoretical insights; structural analysis – to examine system components and their interrelations; scientific abstraction methods.

Results. The study delineates the theoretical framework underpinning the cultivation of innovative potential, proposes pathways for energizing regional innovation, and identifies the catalysts driving innovative progress. The imperative for Ukraine and its regions to transition toward an innovation-driven development model is thoroughly justified, alongside an examination of the impediments obstructing enterprise innovation activities.

Conclusion. Addressing Ukraine's regional development challenges requires nurturing an innovative potential geared toward sustainable economic growth, aligned with regional and national priorities. Key strategies for invigorating regional innovative capacity include: priority state funding for technologically advanced economic sectors; mobilizing private investment, domestic and international, alongside preferential lending schemes; commercialization so production sectors adopt new products and services that meet market demand; advancing venture entrepreneurship in high-risk domains to create novel products and services; applying tax incentive mechanisms to support investment and foster an innovation-led environment.

Keywords: Activity; Development; Innovations; Potential; Enterprise

THE KAIROS MARKETING STRATEGY IN CUSTOMER EXPERIENCE MANAGEMENT: ADAPTING TO DYNAMIC CHANGES IN CONSUMER BEHAVIOR

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Abstract

Objectives. The purpose of the study is to create conceptual basis for a concept of a kairos marketing strategy in the customer experience management, regarding the adaptability of marketing interaction that enterprises can implement when the customer behavior changes dynamically. Special emphasis is placed on the need for appropriate, context-specific marketing initiatives, understanding consumer needs, preferences and expectations, and incorporating these shifts into customer experience management.

Methods. Analytical, comparative, generalization, systematization and strategic are the approaches used in the research to examine the relationship between the kairos marketing approach and the customer experience management approach. The study is oriented towards the identification of relevant changes in consumer behaviour, determination of the factors influencing the choices of consumers in various contexts and at different time periods, and the creation of mechanisms of adapting marketing activities to the evolving needs of consumers. The planned approach takes into account customer data, behavior patterns, interaction history, market conditions and situational factors as a basis for taking marketing decisions in time.

Results. The concept of Kairos marketing is that it is strategically designed to recognise and leverage the appropriate timing, situation and communication environment to enhance customer experience. The study shows that the usefulness of customer experience management is increasingly reliant on the capacity of enterprises to adjust to customer behaviour changes rather than simply on pre-defined marketing scenarios. A Kairos approach allows companies to adapt communication, offer, customer interactions and service processes based on evolving customer expectations and circumstances. This will involve continuous consumer behavior tracking, critical changes identification, segmentation based on context, selection of suitable communication timing, adaptation of customer experience management practices. This can help increase the marketing interactions' relevance, customer engagement and the ability to better adjust the business to market changes.

Conclusions. To make the most of a kairos marketing strategy, it is necessary to combine consumer behavior monitoring, consumer information-based decision-making, context-based analysis and organizational flexibility into customer experience management. When the moment and context are right, then enterprises can better adapt to the shifting need and expectation of customers. Simultaneously, the implementation will need ongoing monitoring and analysis of behaviour signals, integration of marketing and customer-oriented processes, and frequent updates of strategic and operational decisions. The development of more adaptive systems of customer experience management in dynamic market environments could therefore be considered as an instance of kairos marketing.

Keywords: marketing strategy, customer experience management, consumer behaviour, customer engagement, contextual marketing, marketing adaptation, consumer expectations, dynamic markets, kairos marketing.

UKRAINE'S INNOVATION ACTIVITY IN THE CONTEXT OF EMERGING GLOBAL TRENDS IN THE IMPLEMENTATION OF INNOVATIONS

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Abstract

Objectives. Innovative activity reflects a readiness for continuous qualitative change based on the implementation and commercialization of innovations with the aim of enhancing the economy's competitiveness. Key aspects in assessing innovation activity at the macroeconomic level include the intensity of innovation implementation, its effectiveness, and the scale of change. The purpose of this study is to assess Ukraine's innovation activity in the context of global trends in innovation implementation.

Methodology. The methodological framework for studying Ukraine's innovation activity is based on up-to-date statistical data and alignment with European standards, as well as on a combination of systemic and institutional approaches, comprehensiveness, and objectivity. This makes it possible to assess the current state of affairs and the challenges facing the implementation of innovations in Ukraine.

Key Findings and Results. According to the Global Innovation Index ranking, in 2025 Ukraine ranked 66th among 139 countries and 35th among 39 European economies. Specifically, Ukraine ranked 106th in the regulatory environment, 89th in the business environment, 65th in human capital and research, 48th in education, and 23rd in information and communication technologies. In 2024, Ukraine ranked 60th among 133 countries and 34th among 39 European economies, and in 2023, it ranked 55th among 132 and 34th among 39, respectively. In the annual Global Startup Ecosystem Index 2025 ranking by StartupBlink, Ukraine ranked 42nd, improving its ranking (from 46th in 2024 – 46th place) and entering the top 10 countries in Eastern Europe (8th place). The following Ukrainian cities made it into the top 1,000 cities of the Global Startup Ecosystem Index 2025: Kyiv (68th place), Lviv (404th), Kharkiv (618th), and Odesa (725th).

Conclusions. It is advisable to study Ukraine's innovation activity systematically. Comparing indicators of innovation implementation in Ukraine with those in leading countries around the world makes it possible to identify existing gaps as well as opportunities for adopting best practices.

Keywords: Innovation; Innovation Activity; Economy; Global Innovation Index; Global Startup Ecosystem Index

MODERN APPROACHES AND ADAPTIVE MECHANISMS OF COST MANAGEMENT AS A FACTOR IN IMPROVING ENTERPRISE PERFORMANCE

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Abstract

Objectives. The study aims to substantiate modern approaches and adaptive mechanisms of enterprise cost management as an important factor in improving the efficiency of economic activities, ensuring financial stability, competitiveness, and the long-term viability of enterprises under conditions of economic uncertainty and rapid environmental changes.

Methods. The main research methods include analysis, comparison, generalization, and a functional approach to cost management. Particular attention is paid to the application of Activity-Based Costing (ABC), risk-oriented budgeting, adaptive modeling, digital management tools, and internal controlling.

Results. Modern cost management is considered as a purposeful and systematic managerial influence on the processes of cost formation, planning, accounting, analysis, and control aimed at improving financial results and developing an optimal production model. The study emphasizes the importance of clearly distinguishing between resource consumption and costs as a prerequisite for establishing an effective accounting and control system. An organizational and economic mechanism of cost management should integrate resource-saving factors, cost standardization, current planning, systematic accounting and analysis, and incentives for cost savings. The application of Activity-Based Costing enables more accurate determination of product costs, supports pricing decisions, identifies areas of managerial responsibility, and facilitates the modeling of cost behavior based on differentiated resource consumption. In an unstable external environment, adaptive cost management models that combine strategic planning, flexible budgeting, operational monitoring, comprehensive performance evaluation, and feedback are particularly relevant. The effectiveness of such models can be enhanced through ERP and BPM systems, internal controlling, and motivational management. The main barriers to the implementation of modern cost management systems include insufficiently detailed analytical information, limited use of management accounting tools, inadequate automation, and weak integration of cost analysis into strategic management.

Conclusions of research. The development of an effective enterprise cost management system requires an integrated and adaptive approach combining a harmonized terminology framework, risk-oriented budgeting, functional cost analysis, adaptive modeling, and digitalization of analytical processes. The implementation of modern management and controlling tools can contribute to more accurate managerial decision-making, greater flexibility and financial stability, and the formation of long-term competitive advantages for enterprises.

Keywords: cost management; enterprise performance; adaptive management; cost analysis; risk management; budgeting; digitalization; internal controlling

Section 3. Education, Human Capital and Social Innovation

EVALUATING THE ALIGNMENT OF ACADEMIC LIBRARIES IN PAKISTANI HIGHER EDUCATION INSTITUTIONS WITH THE INCHEON DECLARATION (EDUCATION 2030): A FRAMEWORK FOR PROMOTING LIFELONG LEARNING

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Abstract

Objectives. This research study finds the role of academic libraries in Pakistani higher education. It examines their connection with the Incheon Declaration Education 2030, especially lifelong learning and equal access to knowledge. Pakistan has 278 education institutions, with 163 public higher education institutions and 115 private higher education institutions. The research study examines whether these libraries offer inclusive spaces and support learning beyond formal academic enrolment.

Methods. This research study applies a qualitative approach to evaluate the role of academic libraries. It does this by reviewing policies, and library practices. It emphasizes on library management policies and examines how these policies align the lifelong learning goals inked in the Incheon Declaration. Pakistan has a population of about 259.5 million and a literacy rate of around 63%. These demographic factors provide a significant background for understanding how academic libraries can contribute to social development, and opportunities for continuing education.

Results. The findings show that academic libraries in Pakistan's higher education institutions face serious challenges in supporting the lifelong learning goals of the Incheon Declaration. Pakistan's federal budget for 2026–27 allocates 43% to debt servicing. Therefore, making better use of existing academic library resources is increasingly significant. Current library policies restrict access to former students who are no longer enrolled. This prevents graduates, professionals, independent researchers, and community members from using valuable resources. Academic libraries should therefore adopt more inclusive policies that extend access beyond formal education and support lifelong learning.

Conclusions. The study shows that Pakistani academic libraries need better policies to become open, inclusive, and community focused spaces. Better access to library resources can support lifelong learning and improve knowledge sharing. It can also help Pakistan achieve the goals of Education 2030. Academic libraries should serve more than just students. They should also support the wider community. Inclusive library policies can promote equal educational opportunities and personal development. Future policies should treat libraries as lifelong learning centers. They should provide accessible resources, encourage public involvement, and support learning and research.

Keywords: Academic Libraries; Education 2030; Incheon Declaration

SOCIAL OPEN INNOVATION FROM FUTURE SKILLS TO ACTIONABLE PLATFORM FEATURES: AN ATLAS-INFORMED DECISION FRAMEWORK FOR AI-ENHANCED SUSTAINABILITY EDUCATION

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Abstract

Objectives. The paper aims to develop a structured pathway for translating future-skills priorities into actionable features of an AI-enhanced educational platform for sustainability education. The study addresses a design problem that appears when competencies linked to employability, innovation and sustainability — including systems thinking, creativity, resilience, empathy, self-awareness, leadership and lifelong learning — are treated as course content rather than as capacities requiring reflection, contextual understanding and behavioural transformation.

Methodology. The research applies a conceptual design-synthesis approach grounded in the ATLAS framework, Adaptive Teaching and Learning Allocation and Selection. ATLAS is used as a pre-implementation decision framework for connecting educational aims with pedagogical and platform-level decisions. The study builds on a prior ATLAS-based selection of three transformative methods: Challenge-Based Learning, Emotional Intelligence and Empathy, and Place-Based Learning. These methods are mapped to future-skills domains and then translated into platform elements. The resulting elements are examined through an Actionability Prism combining Cambourne's seven conditions for effective learning with trust as an additional condition for AI-supported learning environments.

Key Findings and Results. The analysis shows that future-skills development in sustainability education requires platform features that go beyond content delivery and assessment. Challenge-Based Learning supports action planning, collaborative problem solving and impact assessment. Emotional Intelligence and Empathy require reflective tasks, empathy scenarios and guided dialogue. Place-Based Learning requires local-context exploration, situated examples and links between personal experience and wider sustainability systems. The Actionability Prism indicates that AI-enhanced platform features should support immersion, demonstration, responsibility, safe practice, application, feedback and trust. The model identifies reflective assistance, learning coaching, scenario generation, local-context adaptation, project support, impact visualisation and governance functions as core platform requirements.

Conclusions. The study contributes an ATLAS-informed social open innovation framework for moving from abstract future-skills agendas to pedagogically justified platform features. It argues that AI implementation in sustainability education should begin with learning conditions and intended behavioural transformation, not with available technologies alone.

Keywords: Future of Work; Skills Development; Platform design; Social open innovation; Sustainability education

FROM VENTURE CREATION TO VALUE CREATION: HOW AN ENTREPRENEURIAL MINDSET REFRAMES ENTREPRENEURSHIP EDUCATION FOR THE FUTURE OF WORK

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Abstract

Entrepreneurship education has traditionally been evaluated through outcomes such as venture creation, business start-ups, and entrepreneurial intention. While these remain important, they do not fully reflect the broader competences increasingly required in a labour market characterised by uncertainty, rapid technological change, and complex societal challenges. This paper argues that entrepreneurship education should be understood less as education for venture creation and more as education for developing an entrepreneurial mindset centred on value creation.

The paper draws on empirical evidence from the first eighteen months of the Sustain4Future project, an EIT Higher Education Initiative, with particular emphasis on the implementation in education programmes at University West, Sweden. The analysis is based on qualitative and quantitative monitoring data, including curriculum pilots, student reflections, educator feedback, and institutional documentation. A structured value-creation approach was embedded into existing courses in Health Sciences, Engineering, and Business, Economics & IT, engaging more than 115 students. Rather than treating entrepreneurship as a stand-alone subject, entrepreneurial learning was integrated into disciplinary education through authentic societal and industry challenges.

The findings suggest that the most significant outcomes are not immediate venture creation but the development of transferable competences relevant across professions. Students demonstrated increased opportunity recognition, creative problem-solving, stakeholder engagement, adaptability, and confidence in addressing uncertain and open-ended challenges. These findings support previous research suggesting that entrepreneurship education should be viewed as a process of creating value for others rather than primarily creating new firms (Lackéus, 2015). They also resonate with the view of entrepreneurship as a method that can be learned and applied across disciplinary and organisational contexts (Neck, Greene & Brush, 2014).

The paper argues that reframing entrepreneurship around value creation aligns entrepreneurship education with the competences increasingly associated with the future of work, including adaptability, collaboration, critical thinking, and lifelong learning (World Economic Forum, 2025). Embedding entrepreneurial learning within existing curricula also strengthens its institutional sustainability, enabling entrepreneurship to become a natural component of disciplinary education rather than a specialised activity for prospective founders. The paper contributes to ongoing discussions on how higher education can prepare graduates not only to create new ventures, but also to create value within organisations, research, and society more broadly.

Keywords: Entrepreneurial mindset; Value creation; Entrepreneurship education; Future of work; Higher education

EDUCATION FOR SUSTAINABLE DEVELOPMENT IN TIMES OF WAR: EXPERIENCE AND STRATEGIC ROLE OF H. S. SKOVORODA KHARKIV NATIONAL PEDAGOGICAL UNIVERSITY IN UKRAINE'S POST-WAR RECOVERY

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Abstract

This study conceptualizes the theoretical framework and practical implementation of Education for Sustainable Development (ESD) during full-scale martial law, utilizing the case of H. S. Skovoroda Kharkiv National Pedagogical University (KNPU). The research positions education as a fundamental factor in national resilience, psychophysiological adaptation, and post-war state reconstruction. The objective is to analyze how human-centered philosophical traditions adapt to severe wartime challenges as social and educational innovations that preserve human capital and maintain educational continuity in a frontline region.

The methodology synthesizes an analysis of institutional adaptation strategies, empirical monitoring of psychophysiological adaptation responses in children and youth under prolonged stress, and case studies of educational operations in underground spaces and metro schools. The study evaluates multidisciplinary interventions combining art therapy, trauma-informed psychological support, and vocational retraining programs.

The findings demonstrate that integrating Skovoroda's philosophical heritage—centered on internal moral freedom, affinity for work, and human-environment harmony—provides a robust framework for ESD and adaptive mindsets during existential crises. On a practical level, the university established safety-oriented educational protocols aligned with SDG 4 (Quality Education), created civil defense and ecocide-mitigation coursework, and provided lifelong learning and resocialization pathways for displaced persons and combat veterans through professional requalification vouchers. Furthermore, monitoring the psychophysiological status of learners in subterranean spaces yielded crucial insights into maintaining cognitive capacity and mental health during chronic stress.

The study concludes that ESD in wartime functions not merely as a theoretical paradigm, but as an active mechanism for national survival, human capital preservation, and social innovation. H. S. Skovoroda KNPU demonstrates how higher education institutions in frontline areas serve as vital hubs for national resilience, bridging immediate civil defense needs with long-term post-war recovery strategies.

Keywords: Education for Sustainable Development (ESD); Educational Innovation; Lifelong Learning; National Resilience; Safe Educational Space; Social Innovation; Sustainability

HYBRID SUPPORT FOR ONLINE LEARNERS: A UNIVERSITY-BUSINESS CASE STUDY

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Abstract

Objectives. Growing number of parents prefer online schools to traditional schools for a variety of reasons: bullying, not matching the speed of the teaching, health problems, mobility difficulties, neurodiversity or family circumstances. Although online schooling removes the immediate issues it creates other problems such as social isolation, a loss of daily routine, and the absence of constant feedback from adults. The paper introduces LED Education, an Erasmus+ project (GA 101195727) in which two universities and two companies jointly developed and piloted a support system for online learners, and investigate what the collaboration shows about the way such solutions are built and whether they can be scaled.

Methods. In August 2025, a consortium consisting of the Hamburg University of Applied Sciences, Tallinn University, SIA ElizaBuild (Latvia) and Aiedu OY (Finland) established a physical learning hub in Riga for learners between the ages of 10 and 17 who were attending online schools. The university partners provided the pedagogical framework, based on social-emotional learning and biophilic design research, along with a digital literacy curriculum aligned with DigComp and training for tutors. The company partners were responsible for supplying the premises, carrying out the regulatory registration, recruiting staff and managing the day-to-day operations. Two pilot phases took place from September 2025 to May 2026. The evidence gathered includes the students' digital competence assessments before and after the intervention, structured observations of the tutors, the individual learner profiles and the feedback given by the participants.

Results. Digital competence among learners increased in all age groups, the greatest improvement being seen among those who started at the lowest knowledge levels. The more notable discovery relates to which elements provided the most input. It was not the use of technology that made up for the shortcomings of online schooling but rather the kind of infrastructure that had been lost as a result of digitalisation – namely, a physical place to go, a fixed daily routine, and an adult responsible for each learner. The participants reported that it was easier to conduct their studies at the hub than at home.

Conclusions. The aspect that remains after educational digitalisation is exactly the one that doesn't scale, and the costs involved are staffing and premises rent rather than software licenses. This case also illustrates a form of division of labour – it was commercial partners who identified the market and served it, while the academic partners provided the theoretical foundation and the measurement methodology that education initiatives very rarely submit themselves to.

Keywords: Science–Business Partnerships; Social Innovation; Knowledge Transfer; Skills Development; Collaboration

SELF-MANAGEMENT TECHNOLOGIES FOR DEVELOPING RELEVANT SKILLS IN THE BANI-WORLD

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Abstract

Relevance of the study. The BANI concept reflects qualitatively new characteristics of the environment of human life and professional activity. **The problem** lies in the inconsistency of the traditional paradigm of self-management with the new conditions of human functioning. Focusing exclusively on productivity, rigid planning and control does not take into account the growth of psycho-emotional stress, digital addiction, nonlinearity of professional processes and the need for rapid revision of goals and behavioral strategies.

The purpose of the study is to systematize modern self-management technologies and justify the directions of their transformation in accordance with the characteristics of the BANI environment.

Objectives: to systematize key modern self-management technologies; to investigate their compliance with the characteristics of the BANI environment; to determine the directions of their transformation.

The methodological basis of the study is the system, process, adaptive and human-centered approaches. The methods of analysis and synthesis, comparison, systematization, generalization and conceptual modeling were used.

Research overview. The study analyzed the transformation of such key technologies as time management, energy management, attention management, self-leadership, emotional intelligence, digital self-management, stress management, impression management, team management and resource management. The need to move from rigid planning to adaptive management, from time control to complex management of time, energy and attention, from reactive stress management to the formation of psychological resilience, from formal image management to authentic reputation management, from hierarchical team interaction to flexible models of distributed leadership and psychologically safe cooperation is substantiated. It is determined that resource management should cover not only material resources, but also cognitive, emotional, informational and human potential.

Conclusions. It is substantiated that self-management in the BANI environment should transform from a model of productivity maximization to a model of adaptive resilience. Its key characteristics should be flexibility, resilience, emotional competence, attention and energy management, digital hygiene, scenario thinking and the ability to continuous learning.

The practical significance of the results lies in the possibility of their use for the development of programs for the development of professional and managerial competencies, the training of managers and the formation of corporate practices to support the productivity and sustainability of personnel.

Keywords: self-management; BANI; competencies; adaptability; resilience

GLOBAL TRENDS IN INTEREST IN CONTINUING PROFESSIONAL DEVELOPMENT IN HEALTHCARE

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Abstract

Objectives. The interests of modern society in continuing professional development (CPD) is being reshaped by digitalization and the emergence of new demands for lifelong learning. However, these changes may vary significantly across different sectors, which is of critical importance to the operation of the business model of providers of professional development services. This research aims to assess trends in interest in CPD in healthcare in the world using modern Google Trends technologies.

Methods. Google Trends is a web application designed to analyse the search behavior of Google users. Google Trends technology allows to obtain quantitative and qualitative indicators of Google user search queries across different countries and enables the identification current trends over a specified time period. To search for global related trends, the reporting indicators from the Organization for Economic Cooperation and Development (OECD) utilized for countries leading in the number of search queries for the term "CPD in healthcare".

Results. There was a stable level of search activity of Google users related to CPD. A significant advantage of search queries in English for the term "CPD in healthcare" in Google was recorded in the United Kingdom, Australia, New Zealand, Hong Kong, and the Philippines. The assessment of queries showed that from 2004 to 2026, there was a trend of increasing interest in continuing medical education among Google users worldwide, with a significant increase in interest in recent years, especially after 2025. In July 2026, an analysis of interest in the topic of research among the English-medium audience of Google users over the past 3 months was repeated.

Conclusions. Determining the global priority of CPD in the field of healthcare enables higher medical education institutions worldwide to be competitive and realize the advantages of existing fundamental medical schools in the current conditions of a shortage of medical personnel in the world and increasing interest in training in medical specialties. Using the Google Trends web application can be an additional tool for assessing interest in CPD of healthcare professionals for the planning of activities by education providers.

Keywords: continuous professional development, world trends, level of interest, Google Trends

THE ROLE OF ARTIFICIAL INTELLIGENCE IN STRATEGIC MANAGEMENT OF STEM EDUCATION AND INNOVATION

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Abstract

Objectives. The study explores the potential of artificial intelligence (AI) in strategic management of STEM education and innovation and opportunities for employing AI based technologies to enhance educational management, institutional decision making, the capacity of innovation, and the development of STEM competencies. Special focus is given to the role that AI can play in strategic planning, resource allocation, measuring performance, and tailoring STEM education to evolving technology and labor market needs.

Methods. The research uses the analytical, comparison, generalization, systematization and a strategic management approach to the digital transformation of STEM education. Special emphasis is given to AI based analytical and decision support tools, predictive analytics, intelligent learning platforms, learning analytics, automated assessment systems, and personalized learning systems. The study also takes into account the connection between the use of AI, the performance of institutions, innovation management, human capital development, and educational results.

Results. AI is viewed as a key strategic management tool that can drive the organization and development of STEM education and innovation. Educational institutions can use these analytical tools leveraging AI to handle huge amounts of educational, administrative and labour market data, helping managers to spot trends, predict student demand, assess educational effectiveness and make evidence-informed decisions. Predictive analytics can be used to identify students at risk of underperforming and/or dropping out of school and assist in creating custom-designed educational interventions. AI tools can also help in better resource distribution by prioritizing institutional needs and optimizing educational processes, which ultimately leads to a more effective use of financial, technological, and human resources. In terms of innovation management, AI provides a platform for fast-track development of new education programs, incorporation of new technologies into education programs, and promoting collaboration between universities, research institutes, and industry. Personalized learning systems can tailor learning material and learning path to the needs and learning paths of the learner and intelligent assessment systems can enhance the efficiency of feedback to and monitoring from the learner. The institutional level, AI can support strategic flexibility, and for STEM education providers, the use of AI can help them better adapt to technological advances and changing labor market needs. The adoption of AI, however, comes with challenges, particularly concerning data protection, algorithmic bias, unequal access to digital technologies, inadequate digital competencies, financial limitations, and overreliance on automated decision-making. Hence, there is always a balance between technology and the human's expertise in strategic AI management.

Conclusions. Digital transformation and institutional strategy, human capital training, ethical governance and constant monitoring of performance should be included in the overall process of implementing AI in strategic management of STEM education and innovation. AI can be a powerful

asset in strategic decision making, resource allocation, personalized learning, and boosting innovation potential in STEM institutions. Simultaneously, for sustainable implementation of AI, managers and educators must be able to develop digital competencies, ensure that data are well governed, decision-making processes are transparent, and that there is effective human oversight. AI-powered insights and human-driven decision-making can help create more responsive, innovative and competitive STEM education systems that will meet the demands of the digital economy.

Keywords: artificial intelligence; social work; management efficiency; social services; digital transformation; decision-making; predictive analytics; case management; digitalization; resource management

THE ROLE OF ARTIFICIAL INTELLIGENCE IN IMPROVING MANAGEMENT EFFICIENCY IN SOCIAL WORK

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Abstract

Objectives. The aim of the study is to explore the contribution of Artificial Intelligence (AI) towards efficient management in the social work field and the opportunities and challenges that arise when introducing AI-based technologies into the management of social services. The benefits of AI for administrative efficiency, management decision-making, resource management and social services quality and access are given special focus.

Methods. Research methods used are analysis, comparison, generalization and systematization, and an approach in assessing the application of AI in social work from a management perspective. Special emphasis is given to automated systems of data processing and analysis, intelligent information systems, predictive analytics, automated systems of social services management, AI based decision-support systems, and digital tools. The study also takes into account the efficiency of organizations, the quality of services provided, the use of resources and the ethical implications of the use of AI.

Results. AI is viewed as a tool that will increasingly play an important management role to help change the way organizations operate in social work. Automation of routine administrative tasks, processing and classification of large volumes of information, improved case management and decreased administrative burden for social workers & managers are all possible with the aid of AI-based technologies. Predictive analytics open the opportunity to recognize what needs are coming up in the community, determine risks, predict social service needs and enable the better utilization of organizational and financial resources. Decision-support systems using AI can give managers analytical information that is relevant to their needs and help them determine areas that need attention. Moreover, the adoption of AI in social work management may also help enhance communication with service users by utilizing intelligent information systems and automated communication tools, and by facilitating more individualized approaches to services delivery. On the organizational scale, AI can enhance performance efficiency, minimize processing time, streamline operations and support the monitoring and evaluation of social service performance. The adoption of AI comes with substantial challenges, such as data privacy and security concerns, concerns about algorithmic biases, social workers' competency in digital tools, financial costs of AI technology, and the need for adequate digital infrastructure, as well as the danger of overreliance on AI in decision-making processes. AI should be used to support and augment, not supplant, professional judgment and human interaction that are core tenets of successful social work.

Conclusions. To ensure the effective integration of AI into social work, a balanced management approach is essential that integrates technological innovation with professional expertise, ethical considerations, privacy and security, organizational capacity, and the monitoring of AI-driven activities. AI could play a crucial role in making management more efficient, automating administrative tasks, aiding in informed decision-making, and optimizing resource usage while

improving the accessibility and quality of social services. However, the adoption of AI in a sustainable way requires proper regulation, digital skills, supervision and responsible handling of data and algorithms. The combination of AI technologies and human-centered management can contribute to the development of more efficient, responsive, and sustainable social work organizations.

Keywords: artificial intelligence; social work; management efficiency; social services; digital transformation; decision-making; predictive analytics; case management; digitalization; resource management

Section 4. Sustainable Development, Governance, Law and Sectoral Transformation

STRATEGIC CATEGORY RESHUFFLE FOR HARM REDUCTION: DYNAMIC CAPABILITIES AND LEGITIMACY IN TOBACCO INDUSTRY TRANSFORMATION

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Abstract

Objectives. Cigarettes still generate most of the profit in this industry, and they are still the most dangerous product it makes. That gap between profitability and public health is getting harder to defend, both because regulators are moving faster and because the science on harm keeps evolving. So how do large tobacco companies respond without simply losing money? This paper looks at what can be called strategic category reshuffle by shifting money, people, and attention away from cigarettes and toward products presented as less harmful, such as heated tobacco, e-cigarettes, and nicotine pouches. The interesting puzzle here is why a company would willingly risk cannibalising its own initial products.

Methodology. To make sense of this, the analysis combines two theoretical lenses: dynamic capabilities, which explains how firms rebuild themselves under pressure, and legitimacy theory, which explains why firms care about being seen as trustworthy, not just profitable. Together they suggest that a temporary loss in revenue isn't necessarily a mistake but it can be the price of adapting and of earning permission to keep operating and gaining popularity. The evidence base was built by comparing corporate transformation data, ESG disclosures, and sustainability reports against independent public-health literature, rather than relying only on what companies say about themselves.

Key Findings and Results. The numbers from Philip Morris International illustrate the scale of this shift: over USD 14 billion invested in smoke-free products since 2008, these products now making up roughly 40% of net revenue, and close to 38.6 million adult users worldwide by 2024. Scale alone, though, doesn't prove the transition is genuine. Three things need to hold for that:

1. real, independently checked evidence that the risk reduction is real;
2. safeguards that actually keep the products away from young people;
3. reporting that shows cigarettes are being phased out, not just supplemented.

ESG reporting turns out to matter here less as a compliance box-ticking exercise and more as a genuine signal, while the environmental side raises newer problems, like battery waste and plastics of the devices themselves.

Conclusions. The evidence, on balance, suggests this kind of reshuffle only creates lasting value when harm reduction and ESG commitments are treated as core strategy, not an add-on. That matters beyond the companies themselves especially for investors trying to price long-term risk, for regulators still working out the rules, and, most of all, for the people whose nicotine use this transition is meant to affect.

Keywords. Strategic category reshuffle; Harm reduction; Tobacco industry transformation; Innovation; Sustainability

CURRENT TRENDS IN SUPPORTING CULTURAL DEVELOPMENT WITHIN CORPORATE SUSTAINABLE DEVELOPMENT REPORTS

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Abstract

Objectives. This study assesses how corporate sustainable development reports address the support of cultural development in alignment with the Sustainable Development Goals (SDGs), highlighting it as a prominent current trend.

Methods. Public sustainability reports were analyzed using content analysis focused on cultural support, alongside a qualitative analysis of priority cultural issues within the SDG framework.

Results. Led by UNESCO, the international community is actively advocating for a global initiative to establish culture as a distinct, standalone SDG in the post-2030 agenda. This integration would enable targeted funding, indicator measurement, and enhanced cultural heritage protection. Currently, corporate sustainability (ESG) reports primarily address culture through the social lens (the "S" in ESG), utilizing it as a tool for corporate ethics, community engagement, and risk management. Because global reporting standards lack a dedicated section for culture, companies embed this aspect across various business metrics, such as diversity and inclusion, organizational culture, compensation, employment, and workplace safety. Furthermore, culture is treated as an economic driver; for companies in hospitality, media, or fashion, it serves as a core business indicator. A dynamic analysis of Vodafone Ukraine's sustainability reports from 2020 to 2025 (ranging from 77 to 94 pages) revealed a significant upward trend in cultural engagement, measured by the density of culture-related mentions per page. While 2020 featured only one mention per 8.5 pages, the metric improved to one mention every 3–4 pages by 2022, remaining stable with minor fluctuations through 2025. Within human capital management policies, culture focuses on fostering conscious employee responsibility for physical and mental health, emotional well-being, and workplace relationships; thus, Vodafone Ukraine embeds a "culture of recognition" into team interactions. Additionally, in 2025, the corporate running team (Vodafone Ukraine Team 2025) independently organized sports, thematic, and fundraising activities to promote corporate volunteering and a culture of charity. In February 2026, *The Page* published Ukraine's first "Sustainable Development Program Rating," where Deloitte Ukraine ranked first. Although the attention density to culture in Deloitte's 2024 report was moderate (one mention per 4.3 pages), the introduction of an entire section dedicated to a "culture of flexibility and support" warrants further academic analysis.

Conclusions. The analysis demonstrates that corporate sustainability reports serve as valuable sources of data and best practices derived from successfully implemented projects. These insights are crucial for planning future initiatives aimed at achieving the SDGs, particularly through a strategic focus on culture.

Keywords: Sustainable Development Goals (SDGs), content analysis, culture, innovation trends, ESG reporting

PUBLIC SECTOR INNOVATION FOR RESILIENCE: ADAPTIVE FINANCIAL MANAGEMENT IN TIMES OF CRISIS

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Abstract

Periods of crisis place extraordinary demands on public institutions, which must respond to rapidly changing needs while preserving accountability, transparency, fiscal responsibility, and public trust. This paper examines the role of public sector innovation in strengthening institutional resilience through adaptive financial management, with particular attention to budgeting, procurement, resource allocation, and interorganizational coordination under conditions of disruption.

Drawing on an integrative conceptual synthesis of the public sector innovation literature, the analysis brings together three related perspectives: the drivers, barriers, and public value implications of innovation; the influence of political context and critical junctures on innovation trajectories in Ukraine; and the role of public institutions as initiators and facilitators of collaborative innovation across public and private sectors. Ukraine provides a particularly relevant setting because institutional reform, decentralization, digitalization, transparency initiatives, and innovations in public procurement have evolved through repeated periods of political, economic, and institutional disruption.

The analysis indicates that crises can accelerate innovation by opening space for institutional adaptation, experimentation, and new forms of resource coordination, but they do not erase existing institutional constraints. Innovation remains shaped by path dependencies, political and organizational structures, financial capacity, and relationships among public, private, and civil society actors. Digital platforms, innovative procurement practices, and collaborative governance can strengthen responsiveness, coordination, and transparency, while active public sector leadership can mobilize resources and align diverse actors around emerging public needs.

On this basis, the paper defines adaptive financial management as the institutional capacity to adjust financial decision-making and resource allocation to rapidly changing conditions while preserving accountability, legitimacy, transparency, public value, and effective control. Resilience, therefore, is not simply a matter of greater flexibility; it depends on the ability to reconcile timely adaptation with the institutional safeguards required for responsible public financial management. This perspective provides a foundation for examining how innovations introduced under crisis conditions can move beyond temporary emergency responses and become durable institutional capabilities.

Keywords: Adaptive financial management; Crisis resilience; Public sector innovation; Public-private collaboration; Ukraine

LEGAL PROTECTION OF DATA IN THE USE OF ARTIFICIAL INTELLIGENCE IN INVENTIVE AND SCIENTIFIC ACTIVITIES

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Abstract

The purpose of the study is a comprehensive examination of the possibilities of legal protection of data when using artificial intelligence in inventive and scientific activities. The task is to identify legal mechanisms that, to some extent, ensure a balance between innovative development and the protection of exclusive rights.

In the conducted research, a comparative legal method was applied to analyze various international and national normative acts, a systemic approach was used to study the process of protecting exclusive rights, as well as methods of interpreting legal norms regulating the use of artificial intelligence.

The results of the study make it possible to determine that the legal protection of exclusive rights in the use of artificial intelligence in inventive and scientific activities is multidimensional in nature. It was found that international standards form the basis for the protection of personal data, but require certain adaptation to the specifics of various types of scientific research, where results may have a collective or open character. The effectiveness of legal protection largely depends on the activities of specialized control bodies that ensure compliance with norms and monitor the use of different types of data in research. The use of artificial intelligence, in our view, creates new risks for confidentiality. For example, the possibility of automated collection and analysis of large datasets without the proper consent of their owners. All this requires the introduction of legal mechanisms for ethical artificial intelligence, which clearly combine technical standards with legal guarantees.

An original result of the study was the formation of the concept of a legal data ecosystem, which provides for the integration of data protection norms with intellectual property norms. This approach, in our opinion, allows for the simultaneous protection of the rights of inventors and the rights of data subjects whose information was used in research. The obtained results indicate that the quality of scientific research directly depends on the level of legal protection of data. Therefore, we can assert that the higher the level of trust in the system of legal protection, the more actively researchers and enterprises are willing to share information, which stimulates innovation.

The results of the study allow us to conclude that the legal regime of data protection in the use of artificial intelligence in inventive and scientific activities is a key factor in ensuring the balance between innovation development and the protection of inventors' rights.

Keywords: artificial intelligence; intellectual property; inventive activity; legal data protection; scientific research

AREAS OF STRATEGIC MODERNIZATION OF THE CERAMICS INDUSTRY BASED ON ESG PRINCIPLES – STRATEGY

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Abstract

Objective. The study is aimed at revising the rules of operation in the porcelain and faience industry of Ukraine through the modernization of its managerial, economic, technological, social, and personnel components. It proves that it is no longer possible to manage enterprises in the same way. Domestic enterprises must forever abandon the unprofitable pursuit of large volumes of mass production. The main goal of the work is to develop and implement flexible operating models. Such elasticity can help businesses quickly change their assortment to new trends and tastes of buyers, confidently withstand shocks from external challenges, and quickly overcome the total lack of money in the industry and withstand competitive struggle.

Methods. We build our analytics on the basis of a comprehensive study of live market processes. The study combined the tools of system-structural and factor analysis. The methodology of multifactor comparison of the main competitors in the industry and the matrix modeling model of strategies were also applied. The practical basis of the work is a digital methodology for assessing daily processes through a point system.

Results. We have analyzed the structure of foreign supplies in detail. For this, we used official statistics of the State Customs Service of Ukraine. Today's realities have clearly proven the complete absurdity of waging a direct price war with foreign competitors in the mass segment. The industry has finally lost the former "economy of scale", and gas and electricity costs now simply absorb the lion's share of the budget of enterprises. Instead, we have combined indicators of flexibility, speed of decisions and marketing maneuverability into a single Operational Antifragility Index. The environmental component of the strategy is implemented through the willingness of management to use "clean technologies" in its work, the rejection of harmful chemical whitening of glaze (which prevails in Asian imports). The social component is implemented in the form of preserving human resources in regions that were significantly affected by the war. This model reflects the strict requirements of European environmental, social and management standards of sustainable development. Based on these factors, we built a strategic matrix. It clearly divides the industry companies by type and indicates their path from the forced shutdown of old lines to the production of unique craft tableware.

Conclusion. The analysis clearly shows that the systematic implementation of the principles of the international ESG strategy is the only ticket to the future for domestic brands in wartime. The state aid itself should go through the creation of special ceramic industrial parks. This approach allows our manufacturers to receive preferential foreign loans, protect the domestic market from dumping competition and restore the prestige of the industry.

Keywords: modernization, ESG strategy, antifragility, maneuverability, matrix modeling

BRIDGING THE CONNECTIVITY GAP: ESRS AND FINANCIAL REPORTING UNDER IAS 37

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Abstract

Objectives. The Omnibus I reform on corporate sustainability reporting, introduced by Directive (EU) 2026/470 in February 2026, significantly changes the approach to determining the scope and materiality of information to be disclosed. As a result of the revision of the European Sustainability Reporting Standards (ESRS), initiated by the European Commission in May 2026, the mandatory reporting data should be reduced by more than 60%. At the same time, the gap in information connectivity between environmental indicators disclosed in sustainability reporting and their monetary valuation in financial reporting remains an important challenge. Therefore, the objective of the study is to substantiate and develop an integrated model for the transformation of environmental indicators of non-financial reporting, defined by ESRS E2 and ESRS E5, into long-term financial liabilities of the company in accordance with the requirements of IAS 37.

Methods. The study employs regulatory and comparative analysis of the provisions of IAS 37, the CSRD, the ESRS, and the Omnibus I reform; economic and mathematical modeling to develop a framework for assessing environmental benefits; scenario analysis comparing formal and integrated approaches using a hypothetical industrial enterprise as a case study; and the double-entry method to substantiate the accounting treatment of the relevant transactions

Results. The study develops an integrated model for the monetary valuation of environmental provisions (EP), translating environmental impact indicators derived from ESRS E2 and ESRS E5 into estimates of long-term environmental obligations. The model incorporates the costs of demining, decontamination, and land remediation, while accounting for the time value of money. The study also proposes an accounting procedure for the initial recognition of the provision and the subsequent recognition of interest expense arising from the unwinding of the discount, in accordance with IAS 37.

Conclusion. The scenario analysis shows that the integrated approach results in more comprehensive recognition of long-term environmental liabilities compared with conventional practice. Although this approach leads to a temporary decline in certain current financial indicators and liquidity, it ensures a more accurate reflection of the enterprise's financial position, helps preserve its capital, and enhances the transparency of financial reporting for stakeholders.

Keywords: IFRS; ESRS; Directive (EU) 2026/470; environmental provisions; connectivity gap

THE TREND TOWARDS SUSTAINABLE DEVELOPMENT THROUGH STRENGTHENING ENVIRONMENTAL PROTECTION BY LEGAL MEANS OF ENVIRONMENTAL LIABILITY

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Abstract

Objectives. To respond to the challenges associated with achieving the Global Sustainable Development Goals on the conservation of natural resources, the legal regulation of environmental liability becomes an urgent task, therefore, determining the trends of interest in its solution is of urgent importance.

Methods. General scientific methods of analyzing priority approaches to legal support in the EU and the Council of Europe for the conservation of natural resources and environmental liability were used. The assessment of the level of interest in this topic in the world, EU countries and Ukraine was determined in the Google Trends search engine, which allows for different time periods to assess the number of requests taking into account the geographical criterion.

Results. The signing of the 2025 EU Convention on the Protection of the Environment through Criminal Law is a landmark agreement aimed at strengthening environmental protection by combating environmental crimes throughout Europe and beyond. The official page of the treaty (CETS No. 228) notes that the first signatories were Moldova and Portugal, followed by Latvia, Luxembourg, Cyprus, Sweden, Montenegro, and will enter into force after its ratification by ten states. The Convention supplements Directive (EU) 2024/1203 on the protection of the environment through criminal law, so attention to the issue of environmental liability is growing. Directive 2004/35/EC on environmental liability as amended in 2025 is aimed at deterring offenders. The author assessed the level of search activity in Google on the topic of environmental liability (in Ukrainian) in Ukraine over the past 5 years (as of August 15, 2026) using the online search resource Google Trends. During martial law, there is a trend towards an increase in queries, among the leaders of Poltava and Khmelnytsky regions, the query in English environmental compliance has a significantly higher level, especially in 2026, in particular in Odessa and Lviv regions, which can be explained by their significant international trade. An assessment of interest in the world in this topic over the past 5 years has shown a significant increase in queries, starting from 2025 with a peak value in May 2026, which requires additional analysis. Meanwhile, in terms of regional distribution, the leadership is held by the USA, the Philippines, South Africa, and therefore different parts of the world, which emphasizes the global importance of environmental protection. Among the EU countries, there is a significant quantitative lag in searches for the topic of environmental responsibility, and only after the 30th position are the Netherlands, Denmark, and Portugal, which emphasizes the need for an entire campaign in the EU and the Council of Europe to draw attention to the topic of environmental protection by means of criminal law.

Conclusions. The analysis proved that Ukraine's accession to the Council of Europe Convention (CETS No. 228) will contribute to improving legal regulation in the environmental sphere regarding liability for environmental violations and reducing the risks of environmental damage in the context of achieving the goals of sustainable development and restoration.

Keywords: sustainable development goals, Google Trends, environmental responsibility, environmental protection, legal support

MANAGEMENT SYSTEM OF KNOWLEDGE AND PROFESSIONAL SKILLS OF LABOR MIGRANTS OF COUNTRIES IN THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS

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Abstract

Research problem. *The research focuses on the development of a system for managing the knowledge and professional competencies of labor migrants in support of the achievement of Sustainable Development Goals (SDGs 4, 8, 9, 17).*

Objectives. The main objective of the study is to develop a knowledge and professional skills management system for labor migrants in the context of achieving the SDGs. This includes the development of criteria-based indicators for assessing the levels of knowledge and professional skills of labor migrants during their selection for employment in host countries, using both quantitative and qualitative evaluation methods based on the indicators of the Global Talent Competitiveness Index (GTCI).

Methods. To used input data from the indicators of the GTCI of countries worldwide, as well as methods for assessing competitiveness, standardization, weighted scoring, ranking assessment, the Sturges method, and the criterion method.

Results. During the assessment of the levels of knowledge and professional skills of labor migrants in the specified countries, it was established that the leader is Serbia's labor migrants (1st place) with a value ($I_c = 0.79$); labor migrants from Albania rank (2nd place) with a value ($I_c = 0.75$); labor migrants from Ukraine rank (3rd place) with a value ($I_c = 0.69$); labor migrants from Turkey rank (4th place) with a value ($I_c = 0.68$); labor migrants from Belarus rank (5th place) with a value ($I_c = 0.63$); labor migrants from Moldova rank (6th place) with a value ($I_c = 0.56$). The developed system for assessing the levels of knowledge and professional skills of labor migrants makes it possible to address these needs across criterion ranges corresponding to different levels, from below average, $0.52 \leq I_c < 0.57$; to above the high level, $I_c \geq 0.79$ of the knowledge and professional skills of labor migrants.

Conclusions. From a theoretical perspective, these findings may contribute to the further development of management theory and methodology by improving the system for managing the knowledge and professional skills of labor migrants during the implementation of SDGs 4, 8, 9, 17.

Keywords: managing, knowledge and professional skills, labor migrants, STGs

IP PROTECTION OF PHARMACEUTICAL INNOVATION AS A DRIVER OF ESG PERFORMANCE AND INVESTMENT ATTRACTIVENESS OF PHARMA COMPANIES

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Abstract

Objectives. The pharmaceutical industry is one of the most research-intensive and patent-dependent sectors of economy. At the same time, growing attention to Environmental, Social and Governance (ESG) criteria and their role in investment decision-making caused the need to develop a specific ESG assessment framework for pharma companies. IP protection is considered as critical to fostering R&D investment into commercially viable and market-trusted innovation. This is why, we consider the question of whether strong patent protection is also associated with pharma companies' ESG profile.

Data and Methods. The research applies a correlation-based methodological approach. The main data sample is from Refinitiv Eikon panel data (fiscal year 2024) for 10 publicly listed companies in the Pharmaceuticals sector (TRBC classification), based on the largest reported R&D Expenditures for fiscal year 2024 and data availability. We use a three-level structure, based on WIPO approach. R&D Expenditures indicator represents "innovative input". "Innovative output" is represented by the number of a company's patents/technologies, identified through a manual search in the Espacenet (EPO patent search database as of the end of 2023). ESG Score as indicator of a firm's ESG reputation represents "outcome". All statistical calculations were conducted in R Studio.

Results. The study preliminary results show that, despite strong relationship between R&D expenditures and ESG reputation ($r = 0.78$), the relationship between patent protection indicator and ESG is weak ($r = 0.32$). The study also shows weak relationship between patent protection indicator and R&D expenditures ($r = 0.25$). The primary hypothesis on connection between strong patent protection and ESG profile is not supported, based on the example of chosen pharma companies. The proposed regression model ($ESG \sim Patents + RnD$) supports the previous results.

Conclusions. The study shows that amount of R&D spending is a more significant factor for ESG reputation than the number of patents for chosen pharma companies. The number of patents also isn't a decisive factor in R&D spending. The small sample size (10) creates a significant limitation. This is why the current findings should be interpreted as preliminary.

Keywords: Intellectual Property, Patents, Pharmaceutical Innovation, ESG, R&D Investment

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