INNOVATION-DRIVEN DEVELOPMENT IN EDUCATION, DIGITAL ECONOMY, AND APPLIED TECHNOLOGIES

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INNOVATION-DRIVEN DEVELOPMENT IN EDUCATION, DIGITAL ECONOMY, AND APPLIED TECHNOLOGIES

Monograph

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3.10. THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE EFFICIENCY OF IT PROJECT MANAGEMENT

In the modern era, the rapid intellectualization of information technologies is driving "intelligent" digitalization across business, industry, and public administration. Artificial Intelligence (AI) is expected to have a profound impact on societal development and to transform multiple domains of the business environment. The integration of AI into IT project management fosters continuous interaction between humans and machines. Managers and software developers in IT companies have already begun employing AI. AI tools and technologies automate the execution of tasks related to human resource management, marketing, customer relationship management, product innovation, and more.

IT projects are no longer confined solely to software development – they now encompass complex interdisciplinary initiatives involving digitalization, transformation, automation, the deployment of cloud solutions, and cybersecurity. In an environment characterized by increasing project complexity, intense competition, and limited resources, traditional management methods are increasingly proving insufficient for achieving strategic objectives within IT companies.

At the same time, the development of Artificial Intelligence (AI) contributes to more effective IT project management. Machine learning algorithms, natural language processing, predictive analytics, and intelligent automation are already being actively integrated into project management tools. AI has the potential to significantly enhance decision-making quality, optimize planning and resource allocation, identify potential risks at early stages, and automate routine administrative processes. Consequently, in the future, managers at all levels will be required to adapt to the use of AI as an integral part of their profession.

The relevance of this study is determined by the need to comprehend the changes brought by Artificial Intelligence into project management practice: whether it indeed improves efficiency, what challenges its implementation entails, and which knowledge and skills become crucial for future project managers. A systematic analysis of current publications, empirical research, and practical case studies in this field enables the identification of both the advantages and the limitations of applying AI in IT project management.

At present, AI techniques are actively applied in key areas of project management; however, the scientific dialogue on their implementation lags significantly behind practical application. In our view, research on integration barriers, ethical risks, and communication tools in the context of AI use in IT project management remains highly relevant.

The development of an inclusive culture and fairness within a company is examined, with emphasis on equal access to professional growth opportunities within a defined qualification framework (Salimimoghadam et al., 2025). The engagement of qualified specialists, their contribution to joint IT projects, and the development of their competencies help the company secure a stronger position in the IT labor market. This study of the ethical and practical aspects of information technologies in project management contributes to a more substantiated and balanced approach in the field.

The growing role of intelligent systems and methodologies in enhancing decision-making, forecasting accuracy, and overall project outcomes is highlighted in the research of Adamantia & Tsironis (Adamantia & Tsironis, 2025). The results of the conducted analysis on the application of AI methodologies to critical success factors of IT projects – such as cost estimation, duration forecasting, and risk assessment – are valuable for informing scholars, researchers, and practitioners about the potential of AI in advancing project management methods. Cost estimation, duration forecasting, and risk assessment are vital for the successful implementation of an IT project throughout its entire life cycle. These factors are identified as decisive during the planning and execution phases, as they directly affect the project's ability to achieve its objectives within the defined time and cost constraints.

The impact of Artificial Intelligence on the field of project management with respect to cost, risk, and planning is examined by Fridgeirsson et al. (Fridgeirsson et al., 2025), where researchers concluded that project schedule management, project cost management, and project risk management are the three knowledge areas in which AI will exert the most significant influence. According to experts, project managers are often unable to develop reliable plans and schedules, and projects frequently fall behind schedule or exceed budget. This may be attributed to external factors affecting their decision-making, leading to irrational choices that can result in overestimation or underestimation of time and costs, as well as influencing project outcomes. Previous decisions made by project managers may also introduce bias, which can affect estimations. Experts emphasize that a shared objective should be the ability to obtain accurate project information and data in order to make rational, data-driven decisions grounded in valuable insights.

It is examined that AI holds enormous potential in the field of software engineering, particularly in project management and planning (Crawford et al., 2023). Although challenges remain in applying Artificial Intelligence and Machine Learning in software engineering, overcoming potential issues requires developing foundational AI implementations capable of addressing the problems faced by IT specialists in project management. Only after establishing this foundational basis will it be possible to effectively resolve emerging issues – whether logistical, ethical, or otherwise.

The article explores how Artificial Intelligence can be employed in project management. Some of the main causes of failure in software development are errors made during the project planning stage and poor project management. If AI could intervene to reduce uncertainty in the initial decision-making and planning phases, software development projects could achieve higher success rates. Specific areas that could be significantly improved include risk assessment and management, cost estimation, and project requirements definition.

It is noted that the most popular AI methods in project management are support vector machines, neural networks, and genetic algorithms (Davahli, 2020). The general processes of project management include effort forecasting, cost estimation, and the identification of project success factors. With respect to project scope management, the study presents research on requirements prioritization using a case-based ranking method. Requirements prioritization involves selecting the most critical requirements during software development processes.

Based on sources (Adamantia & Tsironis, 2025; Crawford et al., 2023; Davahli, 2020; Fridgeirsson et al., 2025; Salimimoghadam et al., 2025), we compiled the AI tools used in IT project management (Table 1).

Table 1. AI Tools Used in IT Project Management

№	Area	Main function	Typical AI approaches
1.	Project planning	Timeline, budget, and team forecasting	ML, ANN, SVM
2.	Resource planning	People, time, and funds management	Genetic algorithms, Reinforcement learning
3.	Control and monitoring	Analytics and forecasting	NLP, anomaly detection
4.	Team communication	Automations for planning and management	NLP, chat bots, LLMs
5.	Decision making	Supporting decision making	Fuzzy Logic, Expert Systems

Based on the conducted analysis, a taxonomy model for the application of AI in IT project management has been developed, reflecting the relationships between the phases of the project life cycle (according to PMBOK) and the corresponding AI technologies:

1. Initiation – AI for requirements and risk analysis (NLP, clustering);
2. Planning – AI for budget and schedule forecasting (ML, SVM, NN);
3. Execution – AI for resource optimization (ACO, GA), communication (chatbots);
4. Monitoring – AI for delay analytics (RL, anomaly detection);
5. Closure – AI for results evaluation and lessons learned (text mining, NLP).

The model is dynamic and can be adapted to Agile, Scrum, or Waterfall methodologies by incorporating specific AI application scenarios (e.g., generation of user stories, automatic prioritization of backlog items, etc.).

The aim of the empirical study is to determine the level of AI technology adoption in IT project management and to assess its impact on the efficiency of management processes.

Research Objectives:

1. Collect data on the level of AI tool adoption among IT project management professionals.
2. Identify areas of application (planning, risk management, communication, reporting, etc.).
3. Analyze the relationship between AI usage and project performance.
4. Develop an original conceptual model for AI integration into the project cycle.

Research Methodology:

1. A survey (questionnaire) has been selected as the primary method for collecting primary data. The target audience includes IT project managers, PM coordinators, Scrum Masters, analysts, and members of digital transformation teams.

2. Instrument: Google Forms / Typeform or semi-structured interview format.

3. Sample size: It is planned to survey 30–50 respondents from companies implementing IT projects in Ukraine.

Key questionnaire questions:

№	Question	Format
1.	Does your team use AI tools in project management?	Yes / No
2.	In which areas do you apply AI? (multiple choice)	Plans, Resources, Risks, Communication, Analytics
3.	Which tools do you use?	Jira AI, Asana, ClickUp AI, custom solutions
4.	What is the level of AI impact on project outcomes (on a scale of 1-5)?	Likert scale
5.	What challenges have you encountered when implementing AI?	Open
6.	Do you consider AI useful as a decision-support tool?	Yes / No
7.	How important is AI for the future of project management?	1-5
8.	Which functions, in your opinion, should AI cover in the next three years?	Open

Research Hypothesis H1: The use of Artificial Intelligence technologies in IT project management positively correlates with improved efficiency in resource management, scheduling, and risk management.

The empirical study makes it possible to identify the practical aspects of AI implementation in project management, test the hypothesis regarding its impact on efficiency, and propose the original AI-PME model, which generalizes functional components and performance effects.

The purpose of this work was to examine the level of AI tool adoption in management practice and to determine their impact on the effectiveness of project management.

For the practical implementation of the study, a Google Form questionnaire entitled “Application of Artificial Intelligence Technologies in IT Project Management” was developed, and survey responses were collected.

Questionnaire:

1. Does your team use AI tools in IT project management?
- Yes;
- No;
2. In which areas do you apply AI? (multiple choices allowed)
- Planning;
- Resource management;
- Risk management;
- Ongoing control;
- Communications;
- Reports & analytics
- Other

3. Which AI tools do you use?
- Jira AI Assist;
- ClickUp AI;
- Asana Smart Workflows;
- Monday AI;
- Custom solutions;
- Other.

4. How would you assess the impact of AI on project management effectiveness (on a scale from 1 to 5)?
- No impact at all;
- Low impact;
- Medium impact;
- High impact;
- Critical impact.

5. Do you believe that AI can effectively support managerial decision-making?
- Yes;
- No;
- Partially.

6. How important is AI for the future of IT project management?
- Not important;
- Low important;
- Important
- High important;
- Key important.

7. What challenges have you encountered when implementing AI in the project environment? (open-ended response)

8. Which functions, in your opinion, should AI cover in project management over the next three years? (open-ended response)

The survey involved 34 respondents from various IT companies in Ukraine. Among them, 59% were IT project managers, 24% team coordinators, 12% analysts, and 5% held other roles. The majority work in medium- and large-sized companies (from 50 to 500 employees).

Eighty-two percent of respondents indicated that their teams already use AI tools in project management.

Main areas of AI application:
- Planning – 71%;
- Resource management – 62%;
- Risk management – 59%;
- Analytics – 54%;
- Communication – 48%;
- Контроль виконання – 44%.

Most popular tools:
- Jira AI Assist – 61%;
- ClickUp AI – 47%;
- Asana Smart Workflows – 41%;
- Monday AI – 21%;
- Custom solutions – 32%.

Main challenges in AI implementation:
- Lack of experience – 58%;
- Lack of integration – 46%;
- Concerns about the accuracy of AI decisions – 39%;
- Cost of service – 31%.

Mostly expected functions:

- Automatic forecasting of delays and risks;
- Generation of technical specifications;
- Recommendations for resource allocation;
- Automation of report preparation.

Thus, Hypothesis H1 – "The use of AI technologies positively correlates with the efficiency of schedule, budget, and risk management" – was confirmed based on the following results:

- a high level of AI adoption;
- a high assessment of its effectiveness;
- positive expectations for further development.

The survey demonstrated an increase in the maturity of AI implementation in IT project management, although barriers related to human factors, integration, and trust remain. The identified expectations may serve as a basis for developing a roadmap for AI adoption in the project management environment.

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CONCLUSIONS

The materials presented in this monograph confirm that the processes of digitalization and innovation are reshaping education, the economy, and applied sciences at an unprecedented pace. The diversity of research directions represented here demonstrates the complexity of modern technological development and its multifaceted impact on professional training, management, and technological progress. Through a comprehensive analysis of theoretical frameworks, empirical studies, and applied models, the contributors highlight the transformative power of information and communication technologies in creating a knowledge-based society and ensuring sustainable national growth.

In the field of education and vocational training, the authors emphasize that technological innovation is not only a tool for modernization but also a catalyst for pedagogical reform. The integration of electronic social networks, artificial intelligence, and digital literacy initiatives strengthens the connection between theory and practice, helping to form highly competent, adaptive, and value-oriented professionals. The studies reveal that digital tools enhance self-directed learning, facilitate cross-cultural interaction, and contribute to the psychological well-being and professional resilience of students and educators alike.

The findings of the economic and managerial research illustrate that digital transformation drives systemic changes in business processes, marketing, investment management, and public governance. The use of big data, artificial intelligence, and machine learning in financial decision-making provides new mechanisms for assessing risk, forecasting, and strategic planning. Scholars also highlight the role of innovation in maintaining economic stability during crises and wartime, as well as the importance of partnerships between public and private sectors in supporting technological infrastructure and national security. Together, these studies outline a vision of a digital economy that is transparent, flexible, and human-centered.

The section on applied and specialized technology solutions reveals the practical dimension of innovation. It shows how advanced technologies – ranging from artificial intelligence and GIS systems to modern diagnostic and machine-learning techniques – can optimize production, improve engineering accuracy, and support environmental sustainability. The exploration of creative motivation, linguistic development, and cultural heritage preservation underscores that innovation extends beyond the purely technical sphere and serves as a driver of intellectual and cultural renewal.

Overall, the monograph demonstrates that the future of social and economic development depends on the effective synthesis of technological advancement and human potential. The studies presented here advocate for a holistic approach to innovation – one that values not only digital competence but also ethical responsibility, emotional intelligence, and interdisciplinary collaboration. Such an approach ensures that technological progress contributes to the well-being of individuals, communities, and nations.

The collective work of the authors thus provides both a scientific and practical foundation for the on-going digital transformation of modern society. It encourages further research, policy development, and international cooperation in the creation of educational, economic, and technological systems capable of responding to the challenges of the digital age. By uniting diverse disciplines under a shared goal of sustainable progress, this monograph reaffirms the essential role of innovation as the cornerstone of human development in the twenty-first century.

ANNOTATION

Chapter 1. INNOVATIVE TECHNOLOGIES IN EDUCATION AND VOCATIONAL TRAINING

1.1. Vira Andriievska. INTEGRATION OF ELECTRONIC SOCIAL NETWORKS IN THE TRAINING OF FUTURE INFORMATICS TEACHERS

The article explores the problem of integrating electronic social networks into the training of future informatics teachers. The relevance and expediency of conducting educational online marathons in the educational process, which are successfully implemented with the help of the didactic potential of social networks, are substantiated. The specifics of creating an online marathon are shown (taking into account the educational needs and requests of students; logical structuring of the presentation of educational material for each day of the marathon; optimal duration of the marathon; focus on the formation/development of a specific skill; regular real-time monitoring of students' current progress; creation of a community of online marathon participants). An example of the implementation of the educational online marathon "Number Theory" at the Department of Informatics of H. S. Skovoroda Kharkiv National Pedagogical University is given.

1.2. Natalia Bobro. INVESTMENT AND ECONOMIC ASPECTS OF THE DIGITALIZATION OF CLASSICAL UNIVERSITIES IN THE CONTEXT OF DIGITAL TRANSITION

The purpose of the article is to analyze the investment and economic effects of the digital transformation of classical universities in the context of the digital transition, focusing on financial sustainability, resource efficiency, and the formation of new business models in higher education. The study is conceptual and analytical, based on the generalization of modern scientific publications, empirical research, reports of international organizations, and practical cases of university digitalization. The methodological basis combines inductive and comparative analysis, emphasizing the economic feasibility of digital investments. The research demonstrates that university digitalization contributes to increased operational efficiency, cost optimization, revenue diversification, and the creation of digital assets, while proper implementation of digital strategies enhances financial sustainability and opens new opportunities for long-term university development. The study expands the theoretical discourse on digital transformation by integrating the concepts of the knowledge-based economy, investment efficiency, and intellectual resource management and proposes an analytical model explaining the link between digital investments and the university's economic efficiency. This research provides a relevant contribution to understanding the institutional and economic logic of higher education digitalization and offers a holistic approach to assessing its effects at the university system level, combining macroeconomic challenges with micromanagement solutions. The main limitation of the study is the lack of quantitative empirical confirmation of the proposed model, indicating the need for further research on developing KPIs for digital transformation and analyzing the effectiveness of specific business models in various types of universities.

1.3. Vira Chornous, Vasyl Palapa, Valeriy Oksyuta. PROFESSIONAL FOREIGN TRAINING Of FUTURE MEDICAL WORKERS IN THE CONTEXT OF INTERNATIONAL INTERACTION

The article examines the formation of foreign language professional activity of future medical professionals in the context of international interaction. The possibilities of developing students' professional activities during their studies at a medical institution of higher education were identified, which, in turn, is ensured by implementation of acquired knowledge, skills and abilities into practical activities and contributes to their productivity.

The features of the development of foreign language professional education of future medical workers as a process of qualified training of future specialists in the context of international communication and interaction using a foreign language are outlined.

The importance of learning a foreign language and its application in future professional activities is substantiated.

1.4. Pavlo Davydov, Inna Medvid, Inna Tabachnyk. SOFT SKILLS IN THE STRUCTURE OF A HIGHER EDUCATION APPLICANT'S PROFESSIONAL COMPETENCE

The article analyzes the concept and content of soft skills as an integral component of the professional competence of a specialist of the XXI century. Different scientific approaches to their study (behavioral, psychometric, functional, competence-based) are highlighted. Special attention is paid to the «4C» concept (critical thinking, creativity, communication, collaboration), which is recognized as one of the most influential models of key skills of the XXI century. Based on the analysis of domestic and foreign sources, the necessity of a systematic and integrated approach to the formation of soft skills in higher education students is substantiated. This process should include a strategic restructuring of the educational process, in particular: integration of creative tasks into curricula, the use of active teaching methods (project activities, training, debates) and the development of extracurricular activities (volunteering, student self-government, etc.). The article also considers the issue of effective assessment of soft skills and emphasizes their importance in the digital age.

1.5. Nataliia Kucherenko, Serhii Kucherenko. SPECIFICS OF THE INTERRELATIONSHIP BETWEEN VALUE ORIENTATIONS AND PSYCHOLOGICAL WELL-BEING OF PSYCHOLOGY STUDENTS

The article is devoted to the study of the relationship between value orientations and the psychological well-being of psychology students. The value sphere is considered as a system-forming component of personality, which determines life priorities and directions of development. At the theoretical level, the concepts of values by M. Rokeach, S. Schwartz, and modern approaches to understanding psychological well-being (E. Diener, C. Ryff, A. Maslow, C. Rogers, V. Frankl) are analyzed. An empirical study was conducted among master's students of the specialty "Psychology" who combine studies with professional activity. It was found that humanistic values (cognition, creativity, love, family, friendship) positively correlate with self-acceptance, personal growth, and life satisfaction. In contrast, the orientation towards material security and status proved to be a predictor of reduced subjective well-being. The consistency of the value-semantic sphere determines the level of psychological resilience of students and contributes to harmonious professional development. The conclusions emphasize the importance of value regulation of life activity for the preservation of the mental health of young people.

1.6. Oksana Melnychuk, Inesa Khmeliar, Lesia Kushnir. LINGUISTIC SUPPORT AND DIGITAL LITERACY AS INDICATORS OF EDUCATIONAL QUALITY IN THE CONTEXT OF ACCREDITATION: A THEORETICAL PERSPECTIVE

This theoretical paper examines linguistic support and digital literacy as critical indicators of educational quality within the framework of higher education accreditation. Recognizing the increasing demand for transversal competences, the study analyses how these components influence academic program effectiveness across disciplines, particularly in STEM and non-STEM fields. Drawing on interdisciplinary insights, the article discusses the role of language proficiency and digital competence in meeting accreditation standards. The paper advocates for integrating linguistic and digital skills as core educational objectives, emphasizing the need for institutional policies and collaborative approaches to ensure comprehensive quality assurance. This perspective contributes to the ongoing discourse on educational transformation in a digital era, underscoring the pivotal role of language and technology.

1.7. Viktor Nagayev, Sergii Chervonyi, Yevhenii Beznos. FORMATION OF MANAGERIAL COMPETENCE OF SPECIALISTS THROUGH DIGITAL EDUCATIONAL COMMUNICATION

The article examines the essence and specific features of developing managerial competence of modern professionals in the context of digital transformation of education. The role of digital educational communications as a tool for enhancing professional knowledge, skills, and managerial qualities necessary for effective activity in a dynamic environment is revealed. The main approaches to the use of digital platforms, online courses, virtual trainings, and interactive technologies in the process of professional training and advanced development of managers are identified. It is shown that digital educational communications contribute to the integration of academic knowledge with practical skills, the development of critical thinking, and the ability to make managerial decisions. It is concluded that the implementation of digital tools in the system of managerial training increases competitiveness, flexibility, and readiness for innovative changes.

1.8. Svitlana Nykyporets, Maryna Melnyk, Olena Kriutchenko. ENHANCING ENGINEERING STUDENTS' TECHNICAL VOCABULARY THROUGH CORPUS QUERY LANGUAGE (CQL) TOOLS

This article explores the potential of Corpus Query Language (CQL) tools in enhancing the technical vocabulary of engineering students within English for Specific Purposes (ESP) instruction. Based on a study conducted at a Ukrainian technical university, the paper presents a pedagogical model that integrates CQL-based corpus analysis into classroom practice. Real examples demonstrate how learners identified authentic lexical patterns and phraseological structures used in engineering discourse. The results show improved lexical competence, greater learner autonomy, and enhanced metalinguistic awareness. The study highlights the value of corpus-driven instruction for modernising ESP curricula in technical education.

1.9. Iryna Ostopolets, Tetiana Mostova, Yevhen Topalov. PREVENTION OF PROFESSIONAL BURNOUT IN TEACHERS THROUGH COGNITIVE-BEHAVIOURAL THERAPY

The article is dedicated to the problem of teacher burnout, which has become particularly relevant in the context of modern global challenges and military actions in Ukraine. The negative consequences of burnout for mental health and the effectiveness of pedagogical activity are emphasized. The possibilities of prevention based on cognitive-behavioural therapy are considered. A program of training sessions is presented, aimed at developing self-regulation skills, restoring life balance, and building resilience to stress. The integration of the "Healthy Mind Platter" model (D. Siegel, D. Rock) is proposed as a practical tool to support the mental health of teachers.

1.10. Oksana Patlaichuk, Iryna Briukhovetska, Volodymyr Tovstohan. INFORMATION AND COMMUNICATION TECHNOLOGIES IN HIGHER EDUCATION IN UKRAINE: STATUS OF IMPLEMENTATION AND EFFICIENCY

The article examines the state of implementation of information and communication technologies (ICT) in higher education in Ukraine and assesses their effectiveness in the educational process. The main approaches to the classification of information and communication technologies are analyzed, two main groups of ICT are distinguished: general-purpose and professionally oriented. The advantages and challenges associated with the digitalization of education are identified. Based on empirical data, the impact of ICT on the quality of education, interaction between participants in the educational process and innovative development of the university environment are substantiated. The article may be useful for scientists, teachers, administrators of higher education institutions and developers of educational strategies.

1.11. Larysa Poliakova. THE MEANING OF MEDIA LITERACY OF THE UKRAINIAN YOUTH IN THE MODERN HISTORICAL REALITIES

The modern historical realities, in which Ukraine, is staying are marked not only by military challenges, but also by the large-scale informative war. The young people, who are the most active users of digital media, at the same time become the main target of informative attacks. In these conditions, media literacy is one of the key competencies of the 21st century, as it helps to distinguish between true and fake messages, to counter propaganda and to form one's own public position. The meaning of media literacy of the Ukrainian youth people in the conditions of the modern historical challenges, in particular the russian-Ukrainian war and the globalized informative space has been considered in the article. The necessity of the development of the critical thinking, the ability to recognize fakes and to counteract manipulations in media has been emphasized. It is emphasized that the formation of media literacy among the young people is an important factor of strengthening of the national security, the development of the democratic society and the integration of Ukraine into the European space, increasing informative security and the integration of Ukraine into the European educational and cultural space.

Chapter 2. DIGITAL TRANSFORMATION OF THE ECONOMY AND MANAGEMENT

2.1. Iryna Anhelko. THE ROLE OF INFORMATION TECHNOLOGIES IN IMPROVING MARKETING EFFICIENCY IN DIGITALIZATION

The essence and importance of information technologies in improving the efficiency of marketing activity of enterprises in the conditions of digitalization of the economy is revealed. The essence and functional purpose of IT in marketing, the role of modern tools, including CRM systems, Big Data analytics, marketing automation, social networks, cloud platforms and artificial intelligence, which provide new approaches to the management of relationships with clients, optimization of business proceeds and business proceeds, are outlined. It is shown that the use of digital technologies can significantly reduce time and resources, increase the accuracy of forecasting, instantly evaluate the effectiveness of marketing campaigns and form more personalized consumer proposals. It is concluded that information technologies are a key factor in transformation of marketing strategies and determine the success of enterprises in the digital era.

2.2. Oleksandr Bilotserkivskyi. APPLICATION OF INFORMATION TECHNOLOGIES IN ENTREPRENEURSHIP

The purpose of the study is to define the essence of the concept of “information technology” and to analyze their types and functions used in entrepreneurial activity management. An author's definition of information technology is proposed as a set of methods, tools, and processes aimed at the purposeful collection, storage, processing, transmission, and use of data. The main types of information technologies such as operational, analytical, managerial, cloud, mobile, and those used for cybersecurity are considered with their characteristics. The key functions of information technologies including business process automation, resource management optimization, support for managerial decision-making, and improvement of communication efficiency are explored. Their essence and role in enterprise management are revealed.

2.3. Danila Bodashevskyi, Igor Yarmolitsytskyi, Yuliia Bodashevska. PUBLIC-PRIVATE PARTNERSHIP AS A TOOL FOR DEVELOPING GEOINFORMATION SYSTEMS WITHIN THE NATIONAL SECURITY STRUCTURE

The article discusses the role of geographic information systems (GIS) in ensuring national security. It analyzes the theoretical foundations of GIS and geospatial intelligence (GEOINT), their capabilities for collecting, processing, and integrating spatial data in real time. Key areas of application are highlighted separately – from military operations and border control to critical infrastructure protection. The importance of public-private partnerships in the development of GIS is emphasized, and challenges related to standardization, cybersecurity, and privacy protection are discussed. International experience and lessons for Ukraine in creating an effective geoinformation infrastructure are presented. The article emphasizes the need for a comprehensive approach to improve the efficiency, accuracy of analytics, and resilience of national security systems.

2.4. Iryna Farynovych. ASSESSMENT OF LEADERSHIP POTENTIAL AS A TOOL FOR THE STRATEGIC DEVELOPMENT OF TERRITORIAL COMMUNITIES

The article explores the role of civil servants' leadership potential as a key factor in the strategic development of territorial communities. It reveals the essence of leadership in the context of local self-government, outlines its specific features and significance under conditions of decentralization and socio-economic transformations. An improved system for assessing civil servants' leadership competencies is proposed, based on three groups of competencies: organizational management, personnel management, and self-management. The assessment is carried out using an integral indicator, which makes it possible to determine the level of leadership potential and make informed personnel decisions. A correlation has been established between the development of civil servants' leadership potential and the improvement of communities' socio-economic indicators.

2.5. Nataliia Hembarska, Khrystyna Danylkiv, Orysya Voloshyn. KEY ASPECTS OF SMALL BUSINESS FINANCIAL MANAGEMENT IN UKRAINE UNDER CONDITIONS OF WAR

The purpose of this study is to establish theoretical and practical foundations for effective financial management in small businesses in Ukraine under conditions of wartime instability, digital transformation, and the integration of inclusive growth principles. The paper analyzes financial management tools in small businesses, taking into account existing risks and constraints; identifies key challenges and barriers to financial governance in the sector; and proposes directions for improving financial management through the application of digitalization tools, tax planning, and data protection measures. Practical recommendations are developed for small business owners to enhance the efficiency of financial management and ensure resilience amid ongoing instability.

2.6. Lev Kloba, Nazar Dobosh, Oleksandr Starodub. BANK INVESTMENT MANAGEMENT: CATEGORICAL ANALYSIS AND PRACTICAL ASPECTS

The article explores the essence and research tools of bank investment. It presents a range of definitions for the concepts of "investment" and "investing," varying in degree of specificity and methodological approach. The study examines key categories that form the theoretical and methodological foundation of bank investment research, including bank financing, bank investing, bank investment resources, bank investment potential, stocks and flows of bank investments, sources of bank investment resources, and bank investment management.

2.7. Tetiana Lysiuk, Yurii Biletskyi, Larysa Royko. INNOVATION AND DIGITALIZATION AS FACTORS IN THE TRANSFORMATION OF EXCURSION PRACTICE

The article provides a comprehensive analysis of innovative approaches to the digitization of excursion activities, including the use of virtual (VR) and augmented (AR) reality, mobile applications, AI-based audio guides, geolocation services, and interactive multimedia platforms.

The study focuses on the transformation of traditional excursions into digital formats that ensure the accessibility of tourist services regardless of the user's geographical location, promote the personalization of experiences, and expand opportunities for interaction with cultural heritage.

The results presented highlight the role of innovation as a catalyst for competitiveness in tourism and define the vectors for the further development of excursion activities in the context of digital transformation.

2.8. Vitaliy Makohon, Denys Zabolotnyi. FINANCIAL STRATEGY OF AGRICULTURAL BUSINESS: RISK ASSESSMENT THROUGH VAR AND ML APPROACHES

The study proposes a methodology for strategic financial planning of agricultural enterprises that combines forecasting of liquidity gaps with assessment of left-tail interest rate risk based on VaR. The approach is based on an ensemble of volatility models (GJR-GARCH), machine learning (XGBoost), and historical estimates optimized by the coverage error metric. The model accounts for seasonality, cyclicality of financial needs, and regional specificity, ensuring adaptability to external shocks. Scenario analysis of rate increases and yield reductions enabled the assessment of the sector's marginal resilience. A potential reduction in liquidity risk by 12-15%, improvement in VaR accuracy by 20-25%, and decrease in debt burden by 10-12% was established.

2.9. Oleksiy Poburko, Oleg Brykar. RESEARCH ON THE POSSIBILITIES OF BUSINESS SCALING IN UKRAINE THROUGH THE DEVELOPMENT OF INDIVIDUAL INVESTMENT

Regardless of the economic situation, entrepreneurs have two options: develop their business or remain at the same level, because without moving forward, the risk of falling behind will only increase. Entrepreneurs can choose growth or scaling, which will most likely require additional capital to strengthen the team and improve operational activities. Among the sources of capital, funds from individual investors are of great importance, which, when combined into joint investment funds, are a significant resource for development.

2.10. Olha Synihovets. INTEGRATION OF NANOTECHNOLOGIES INTO INTERNATIONAL BUSINESS PROCESSES AND THEIR MANAGEMENT

The development of nanotechnology is marked by rapid growth in the capitalization of the nanotechnology segment of the global market, with an increase in the scale of nanotechnology involvement in the global economy at various levels and in line with modern technological developments. Integration is a key element of process improvement, enabling

companies to reduce costs, improve quality, and increase efficiency. The introduction of nanotechnology into international business processes ensures innovation, increased efficiency, and competitiveness of enterprises in the global market. By strategically integrating nanotechnology, international businesses gain opportunities for growth and long-term development. Integration is occurring in various key areas, including product development, supply chain management, and data analytics.

2.11. Nataliya Synyutka, Oksana Kurylo, Andriana Mazur. E-VAT AS A TAX COLLECTION STRATEGY FOR AGRICULTURAL PRODUCERS IN UKRAINE

The aim of this paper is to study an electronic tax collection strategy for the agricultural sector in Ukraine in the context of budget revenues. We analyse and estimate the tax burden on the agricultural sector before and after Ukraine's fiscal reform between 2010 and 2023. The growth of VAT revenues in relation to GDP after the reform remains unstable. Using agriculture as an example, this article confirms that electronic VAT has had no positive impact on domestic tax collection.

2.12. Tetiana Tkachenko, Oleksandr Hladkyi, Sergii Khlopiak. INFORMATION AND INNOVATION FRAMES IN ECONOMICS AND MANAGEMENT OF METROPOLITAN CITIES AND AGGLOMERATIONS

The economics and management frames of metropolitan cities and agglomeration’s development (inner and outer aspects, functional-component and functional-territorial properties as well as specific signs) are explored. Unique features of representativeness, progressiveness, dynamism and international relations additionally characterize metropolitan agglomeration. The redistribution of economic activities between central core (basic activities) and peripheral zones (attendant activities) are clearly revealed in functional-component structure of metropolitan agglomerations. The market-based mechanisms of economic activities’ optimal relocation in the agglomerated territories that include economic incentives, materials and information encouragement, creation of favorable conditions as well as economic sanctions are investigated.

Chapter 3. APPLIED AND SPECIALIZED TECHNOLOGY SOLUTIONS

3.1. Yelyzaveta Chukurna. STRATEGIES DERECTIONS FOR RENOVATIONG THE ARCHITECTUAL HERITAGE OF THE SOVIET PAST IN THE URBAN ENVIRONMENT

The article presents the results of a comparative analysis of the use of architectural heritage of the Soviet period using the example of two cities: Odesa (Ukraine) and Tbilisi (Georgia). The directions for implementing the renovation strategy are identified using the example of positive features of preserving the architecture of Tbilisi and the aspects of implementing the renovation strategy for the city of Odesa are formed. A SWOT-analysis is conducted, based on which a matrix of renovation strategies for architectural heritage is developed and proposed. Attention is focused on the preservation of historical and cultural heritage, considering European practices in achieving sustainable development goals.

3.2. Rostyslav Dydiak. ANALYSIS OF ACOUSTIC SIGNATURES OF HEAVY TRACKED VEHICLES USING MACHINE LEARNING METHODS

This paper presents an analysis of the revealing acoustic signals of heavy tracked vehicles, focusing on their identification and classification using modern signal processing and machine learning methods. Acoustic data were collected under controlled outdoor conditions at various distances and operational modes, including engine work, movement, and impulsive sound events. Preprocessing included noise filtering, normalization, and spectral analysis. Harmonic and MFCC-based feature extraction enabled detailed characterization of vehicle-specific sounds. Statistical analysis confirmed the stability of low-frequency engine components and highlighted attenuation of high-frequency harmonics with distance. Machine learning models, including StandardScaler and Logistic Regression, were applied to classify sounds, showing promising results. The study demonstrates the potential of acoustic signatures for automated recognition of large-scale mechanical equipment. Findings indicate that spectral patterns and harmonic interactions form unique sound portraits. These results provide a foundation for further research with deep learning methods to enhance accuracy in real-world complex environments.

3.3. Andrii Lagun, Nataliia Kukharska. DESIGN FEATURES OF GEOGRAPHIC INFORMATION SYSTEMS FOR ADDRESSING ENVIRONMENTAL SECURITY ISSUES AND BIODIVERSITY MONITORING

The paper presents the results of research focused on addressing environmental security issues in various sectors of the national economy through the use of Geographic Information Systems built with modern information technologies. The authors analyze different types of human impact on the environmental situation across various regions of the planet. The study establishes the influence of anthropogenic factors on biodiversity, highlighting that deforestation, landscape transformation, and the expansion of agricultural land significantly affect the environment and alter the living conditions of flora and fauna. The development of agriculture alters the structure of surface water systems, making the design of environmental monitoring information systems for surface water quality an essential step in ecological research. The authors also highlight the impact of agricultural enterprises and waste treatment facilities on the environmental situation. Finally, the paper describes the main information technologies used in the design of Geographic Information Systems, with particular emphasis on the integration of interactive maps for visualizing research results.

The importance of learning a foreign language and its application in future professional activities is substantiated.

3.4. Andrii Orhiian, Hanna Balaniuk, Alexandr Orgiyan. EXPERIMENTAL STUDY OF THE INFLUENCE OF TECHNOLOGICAL FACTORS ON VIBRATIONS AND MACHINING ACCURACY ON WIDE UNIVERSAL TOOL MILLING MACHINES

This work is devoted to the experimental study of the influence of various factors on vibrations and machining accuracy on wide-range universal tool milling machines. In the course of the research, experiments were carried out on climb milling with horizontal and vertical spindles, as well as boring with a vertical spindle, using SCh5-32 cast iron as samples. Special attention was paid to the influence of the arrangement of machine components and the condition of movable joints on vibrations during machining, as well as the conditions for clamping the samples, their orientation in the table plane, and the sequence of machining. Strain gauging was used to assess the relative vibrations of the milling cutter and the workpiece, and machining accuracy was evaluated by surface roughness, deviations from flatness and parallelism, as well as ovality and conicity during boring. The influence of these factors on the non-parallelism of the base and machined surfaces and roughness is also analyzed.

3.5. Oleksandr Ovcharov. INTEGRATION OF DIAGNOSTIC DATA INTO THE TURBOGENERATOR TECHNICAL CONDITION MANAGEMENT SYSTEM

The article presents a model of an integrated system for managing the technical condition of a turbogenerator, combining the functions of monitoring, diagnostics, forecasting and strategic management of the operation of power equipment at a nuclear power plant. Particular attention is paid to integration with maintenance and repair systems, which allows a transition from a scheduled approach to the concept of condition-based maintenance. The proposed model provides automated transfer of collected data to forecasting and management modules, taking into account data from other systems and existing reserves (stocks), and creates a unified information space that includes repair history, data from spare parts catalogues and maintenance schedules.

3.6. Yevhen Prokofiev. MODERN INFORMATION TECHNOLOGIES IN THE VOCATIONAL TRAINING SYSTEM: AN INNOVATIVE APPROACH TO THE ORGANIZATION OF THE EDUCATIONAL PROCESS

The article examines the features of the introduction of modern information technologies into the system of professional training of specialists, focusing on their role as a key factor in the innovative transformation of the educational process. The importance of information and communication technologies for the formation of digital and professional competencies of students, the development of their independence, critical thinking and the ability to continuous learning is emphasized. The need to design an integrated educational environment that combines traditional pedagogical methods with modern digital tools to ensure adaptability and flexibility of professional training in the digital economy is substantiated.

3.7. Iryna Stepanova, Svitlana Nykyporets, Halyna Kukharchuk. INTEGRATING ARTIFICIAL INTELLIGENCE TOOLS INTO PROJECT-BASED ENGLISH LANGUAGE INSTRUCTION FOR TECHNICAL STUDENTS: A FRAMEWORK FOR FOSTERING CRITICAL AND CREATIVE THINKING

This article presents a pedagogical framework for integrating artificial intelligence (AI) tools into project-based English language instruction for technical students in Ukraine. Against the backdrop of war-related disruptions, the study explores how platforms such as ChatGPT and Grammarly can support the development of critical and creative thinking within English for Specific Purposes (ESP) courses. Using a mixed-methods approach, the research demonstrates that AI-enhanced project-based learning significantly improves higher-order cognitive skills, increases student motivation, and fosters ethical awareness. The proposed framework responds to both academic and psychological needs of learners during wartime, offering flexible, real-world language tasks that promote autonomy and engagement. The study concludes with practical recommendations for educators and curriculum designers seeking to modernize ESP instruction in technical disciplines while preparing students for professional challenges in uncertain times.

3.8. Yaroslava Vasylkevych, Mykola Ryk, Oksana Kikinezhdi. DEVELOPMENT OF MOTIVATION FOR CREATIVE ACTIVITY OF STUDENTS AS AN INNOVATIVE TECHNOLOGY IN PROFESSIONAL TRAINING

The article provides theoretical justification and empirical research into the features of students' motivation for creative activity. The obtained results reflect the motivational profile and structure of the leading motives of creativity. In the hierarchy of motives for creative activity among students, intrinsic motivation prevails over extrinsic motivation. The most significant factors encouraging creative activity are the desire for self-affirmation and the cognitive need. The leading motivation for creativity is personal independent motivation (developmental motivation). Less significant for effective creative activity turned out to be externally oriented instrumental

motivation, which supports the satisfaction of such needs as fame, success, and material rewards, enabling creative self-expression and obtaining recognition from others, impressing others, and self-presentation. The article considers opportunities for supporting the motivation for creative activity within professional education.

3.9. Tetiana Yarkho, Tatyana Emelyanova, Ievgen Medvediev. THE MODERN CONCEPT OF CLASSICAL AND APPLIED FUNDAMENTAL MATHEMATICAL PREPARATION OF STUDENTS OF EUROPEAN TECHNICAL UNIVERSITY

The paper is devoted to the implementation of the concept of classical and applied mathematical preparation of students in the educational process of technical universities of Ukraine, taking into account the integration into the European educational space. In the current conditions of industrial and transport reconstruction of the state, national technical universities should provide preparation of specialists capable of meeting the rapidly changing challenges of time. The important factor in the reliability and quality of professional preparation of technical university students is the professional and applied orientation of general mathematics education. The paper presents the subject and main tasks of elective mathematical disciplines of technical and transport orientation and samples of relevant professional content.

3.10. Valentyna Yuskovych-Zhukovska, Oleg Bogut. THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE EFFICIENCY OF IT PROJECT MANAGEMENT

The rapid advancement of Artificial Intelligence (AI) is transforming the practice of IT project management by enhancing decision-making, optimizing planning and resource allocation, improving risk assessment, and automating routine processes. This study investigates the level of AI adoption among IT project management professionals in Ukraine, identifies key areas of application, and examines the relationship between AI usage and project performance. The results provide actionable insights for developing an AI adoption roadmap in project management environments and underscore the strategic role of AI in shaping the future of IT project management.

3.11. Inna Zhukovych. THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE STUDY OF THE ENGLISH LANGUAGE BY CADETS OF HIGHER MILITARY EDUCATIONAL INSTITUTIONS

The article explores the essence of the concept of artificial intelligence (AI) and showcases various online AI platforms and chatbots designed for independent English language learning. It highlights the advantages of utilizing these tools in the process of foreign language acquisition. The research findings indicate that cadets of higher military education institutions can leverage AI tools for more comprehensive assistance or consultation, followed by practical application in mastering a foreign language. The study emphasizes the critical role of foreign language proficiency in the career of a modern officer. It also draws attention to the career advancement opportunities enabled by English proficiency, particularly in the context of international cooperation and Ukraine’s aspirations to become a NATO member, where officers have a wide range of development opportunities.

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