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Artificial intelligence in project management

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Abstract. Artificial intelligence (AI) provides assistance at all stages of project implementation – from planning to achieving specific results and profits. Modelling the practical application of AI tools for various routine and managerial tasks is therefore becoming increasingly relevant. The aim of this study was to examine the role of artificial intelligence and the potential of its tools in project management. The principal research methods were qualitative analysis of academic publications, documents, observations, and web-based content, as well as comparative, generalisation, synthesis, and systemic-logical analyses. Academic publications from 2021-2025 on the research topic were analysed, and studies on the use of artificial intelligence in management were systematised. The websites of companies developing the tools AI, as well as those of reputable international organisations providing project management training, were examined. AI tools developed by leading providers were analysed, and their key characteristics and functionalities were compared. A range of artificial intelligence tools that may be effectively applied in business depending on the project type was also considered. The functionality of each tool and its capabilities for performing specific tasks across various project types were determined. A classification of tools based on project types and objectives was studied. Finally, artificial intelligence tools and possible combinations of several such tools, which can be recommended for practical application, are presented. The practical value of the research results lies in their potential use by managers and specialists to optimise project work

Keywords: stages of project implementation; artificial intelligence tools; artificial intelligence technologies; performance evaluation; project type; project management tasks

INTRODUCTION

The integration of artificial intelligence (AI) into various spheres of human activity has become particularly relevant due to the rapid advancement of AI technologies since 2022. Project management has also experienced this transformation, with AI being applied in areas such as risk management, planning, reporting, statistical analysis, and decision support, particularly in routine tasks requiring limited human involvement. The application of AI in project management has encompassed both technical and organisational dimensions, reflecting its interdisciplinary nature. Consequently, research in this field has been structured across domains such as business, management, technical implementation, and the underlying principles of AI development.

S. Bento *et al*. (2022) conducted a systematic literature review and found that, despite growing academic interest, the practical implementation of AI remained limited, although it improved forecasting, resource allocation, and

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decision-making; however, broader implications for human resource management were insufficiently explored. K. Friedrich (2023) examined project management approaches and demonstrated a shift from traditional metrics to a broader perspective incorporating environmental, social, and long-term impacts, concluding that a more holistic and interdisciplinary approach was required. M. Lee *et al*. (2023) examined AI integration within organisations and found that its successful implementation required not only technological adoption but also organisational transformation, including alignment with strategy, data management, and structural adaptation. T. Fridgeirsson *et al*. (2023) investigated the use of AI in project planning, cost estimation, and risk analysis, demonstrating that it effectively supported analytical and forecasting tasks, while project managers retained strategic and communicative responsibilities.

F. Shoushtari *et al*. (2024) analysed AI development methodologies and showed that their application improved decision-making accuracy, resource efficiency, and overall project performance, although further research was required for practical implementation. Q. Liang *et al*. (2024) examined human-AI collaboration and concluded that AI increasingly functioned as a team member, emphasising the need to balance automation and augmentation depending on task complexity and trust. M. Nenni *et al*. (2024) analysed the role of AI in project management and found that its benefits in planning, task optimisation, and decision support were already well established. The authors concluded that AI had transformed project management practices and required the development of digital competencies and a rethinking of professional roles. J. Zhang & A. Dhakir (2025) investigated the adoption of AI across sectors and reported that its implementation had enhanced organisational performance and innovation. The study demonstrated that integrating AI into decision-making and delegating responsibilities had improved employee autonomy, engagement, and productivity. T. Batista *et al*. (2025) explored the role of AI in big data analytics within agile environments and found that its integration with agile practices had improved project performance. The authors concluded that combining AI with business analytics had optimised time, cost, and quality management while supporting organisational sustainability. O. Khilukha (2025) investigated AI tools for automation, data analytics, and predictive modelling, and found that they enhanced planning accuracy and managerial efficiency; however, more advanced AI applications were not addressed. I. Kriskun & A. Bondarchuk (2026) analysed project management effectiveness within modern management frameworks and concluded that AI supported data analysis, forecasting, and decision-making, but it was considered primarily at a conceptual level.

Overall, the reviewed studies demonstrated the benefits of AI while revealing a lack of focus on advanced tools and specific software implementations. The reviewed literature demonstrated that AI was capable of addressing complex and dynamic project management challenges, serving as an effective assistant to managers and specialists. At the same time, the analysis identified certain limitations, as most studies focused primarily on fundamental AI technologies such as chatbots, virtual assistants, machine learning, big data analytics, and predictive modelling. More advanced solutions – including AI-based resource allocation, risk mitigation platforms, decision support systems, and generative AI – were less frequently examined. Furthermore, the literature tended to address AI at a conceptual level, with limited reference to specific software implementations. Insufficient attention was also given to interdisciplinary integration and practical application, which suggests the need for further research into comprehensive AI solutions for enhancing project management efficiency. The main objective of this study was to present the role of AI and the potential of its tools in project management. To achieve the stated objective, the following tasks were undertaken: the AI tools developed by reputable providers available on the information market were analysed; the functionality of AI tools in project management was examined; and the technologies and AI tools, as well as combinations of several such tools that may be practically applied by managers and company specialists, were identified and presented.

MATERIALS AND METHODS

The work was conducted in two directions: a literature review to summarise knowledge on the issue under study, and an analysis of existing AI tools for the effective practical use in project management. The keywords “artificial intelligence”, “project management” and “AI tools and technologies” were defined, along with the inclusion and exclusion criteria for the publications selected for the literature review. The search for sources was conducted using the scientific databases Scopus, Web of Science, and Google Scholar, covering the past five years (2021-2025). Scopus and Web of Science were selected due to their high relevance, strict indexing criteria, and widespread use in bibliometric studies. In total, 21 scientific publications were analysed. Their synthesis and interpretation helped to systematise knowledge on this topic. The analysis of publications allowed to proceed to the second direction of the study and establish the role of AI tools in project management.

The other line of work was carried out using qualitative empirical methods, including searching, document analysis, observation, and the classification of AI tools via the Internet. The key characteristics of each AI tool were identified, and their functions were structured based on the project type or optimal role in completing project tasks. For this purpose, qualitative primary data were analysed – specifically, the key characteristics of AI tools presented on the websites of developer companies. Forty-nine functional AI tools were studied. A selection of reliable and effective solutions was identified as illustrative examples to demonstrate the role of AI and the potential of its tools in project management. The selection of AI tools was guided by a structured evaluation framework that prioritised both technical robustness and practical applicability in project environments. Particular attention was paid to three key criteria: functionality for solving key project management tasks, financial accessibility, and data security. These were complemented by additional considerations, including integration capabilities and API availability, usability and ease of implementation. Was also given to the availability of advanced AI functionalities, such as automation, predictive analytics, and decision support.

Each tool was assessed qualitatively against these criteria, with preference given to solutions demonstrating a

strong balance between high functional, accessible pricing, and reliable data protection standards. Tools offering functionality without imposing excessive financial or implementation burdens were prioritised, particularly where they also ensured secure handling of project data and seamless integration within existing digital ecosystems. Overall, the selected tools represent a balanced combination of functionality, economic accessibility, and data security, alongside ease of use and compatibility with cloud-based and collaborative project management practices. The analytical examination of AI tools demonstrated that it is important not only to know which tool can be used to assist in work, but also to understand how to use it and to have sufficient guidance on future innovations and developments from reputable companies. Such knowledge can reduce the costs of important human resources, such as time and energy, and also impact decision-making timelines.

The identification of SWOT components (Strengths, Weaknesses, Opportunities, Threats) was performed through thematic coding of the selected sources, followed by aggregation of recurring concepts into corresponding categories. Strengths were defined as internal advantages of AI implementation (e.g., process automation, improved forecasting accuracy), while weaknesses referred to internal limitations (e.g., integration complexity, dependence on data quality). Opportunities and threats were conceptualised as external factors that respectively facilitate or hinder effective adoption. To enhance the robustness of the findings, cross-source synthesis and comparative analysis of different scholarly perspectives were applied. Several principles for synthesising AI tool combinations were also applied. These include: the principle of functional complementarity (combinations of tools are formed so that each utilises different but complementary functions); the principle of integrating management and analytical functions (for example, combining project management systems with data analysis and forecasting tools allows for the unification of operational management with analytical support); the principle of visualisation and support for collective decisions (ensures better data understanding and facilitates collective decision-making); the principle of automation of operational processes (optimises task distribution, calendar management, and team workload monitoring); and the principle of adaptation to project type (combinations of tools are selected based on the specifics of the industry or project type). These principles provide the rationale for the functional synergy underlying this study. Thus, a synthesis of tools was conducted based on the unification of three key functional blocks: operational project management; analytics and forecasting; and visualisation, communication, and decision support. Their integration enables analytical results to be translated into management decisions, while visualisation and communication ensure the coordination of teamwork.

RESULTS AND DISCUSSION

The study demonstrated that AI is increasingly being implemented in various areas of project management – from project preparation (stage planning, resource utilisation/allocation, risk forecasting) and real-time implementation (big data analysis, situation assessment, resource control, decision-making) to the delivery of specific project results (interim and final reports). Research on the functioning and use of AI in the modern world is interdisciplinary in nature. Alongside these tasks, resource control and decision support are also considered key areas of modern project management. However, experts emphasised that the use of AI in such tasks still faces technical and practical challenges (e.g., algorithmic bias, lack of transparency).

According to D. Adamantiadou & L. Tsironis (2025), AI has significantly expanded the capabilities of project management, with machine learning, deep learning, and hybrid models enhancing key project management processes such as cost estimation, schedule forecasting, and risk analysis. A review of 97 publications by the authors found that AI methods improved forecast accuracy, automated decision-making, and optimised project task management during the planning, implementation, and closure stages. However, the authors pointed to several unresolved limitations: the insufficient adaptability of AI models to changing project conditions, their limited validation against initial data, and insufficient research into the application of AI in project lifecycle phases such as the post-project review. By processing large amounts of data at the project planning stage, AI can solve the problem of low accuracy in traditional time and cost forecasting. AI plays different roles across industries. In IT and software development, most studies focus on bug tracking, defect prediction, and effort estimation. Many works have demonstrated that AI tools can successfully classify bug-fixing requests and predict software defects. Effort estimation has attracted the most attention from researchers and the using of various platforms for collaborative project management.

AI contributes to more accurate forecasting and improved project management efficiency, a vivid example of which is ChatGPT. V. Aramali *et al*. (2025) focused primarily on generative AI tools based on large-scale language models. Key tools include ChatGPT, Google Bard/Gemini and Microsoft Bing Assistant. These systems are used to automate project documentation, data analysis, report generation and support project planning and monitoring. While these tools can accelerate management tasks and improve project management efficiency, the authors also note the need for human oversight, as well as consideration of ethical issues, data privacy and organisational adaptation of employees to the use of AI technologies. Researchers are examining the impact of AI tools on decision-making. According to researchers S.M. Ismail & G. Salama (2025), project management information systems (PMIS) are a comprehensive digital environment that integrates tools for collecting, processing, storing and analysing project information to support management decision-making. The authors emphasised that the dynamism of a PMIS is manifested in its ability to integrate various data sources, support team collaboration and provide project managers with up-to-date analytical information for operational monitoring and project progress adjustments. A properly designed PMIS architecture is an important tool for improving project management efficiency and the validity of management decisions. At the same time, process automation through AI presents challenges associated with technical limitations and ethical aspects of AI adoption. Scholars S. Salimimoghadam *et al*. (2025) noted that AI-assisted

process automation was fraught with challenges, interruptions, and technical limitations, as well as other aspects of AI development. Thus, the spread of AI technologies in project management was accompanied by factors including organisations' lack of readiness for digital transformation, limited quality data, a shortage of specialists who ensure competence, and organisational and ethical barriers. Successful integration of AI into project management required the development of digital adaptation, personnel training, and the creation of an appropriate regulatory and organisational environment.

Therefore, the integration of AI with emerging technologies becomes a key factor in achieving sustainable project management. Scholar M. Aslam (2025) noted that the introduction of AI technologies into project management has created new approaches to planning, analysing and monitoring project activities. The author noted that the integration of machine learning algorithms, analytical platforms and intelligent decision support systems improves the efficiency of strategy management and project implementation. At the same time, the researcher emphasised the need for scientific research aimed at integrating AI into project management methodologies, as well as the need for new competencies from specialists in this field. AI technologies have begun to be widely used in project management. Of course, AI tools continue to grow rapidly, with new ones being developed and improvements constantly being made. It is difficult to keep up with innovations in such a rapidly evolving field, and it is practically impossible to present the entire spectrum of available tools in a single paper. Therefore, Table 1 presents only some of the AI tools for optimising key project management tasks.

Table 1. The AI tools by area of use

The main function in project management	AI tools and technologies	Features and additional functions
Project management in marketing	ClickUp	Allows structuring projects, assigning roles, tracking time, sharing files, and communicating in real time, ensuring process transparency. More suitable for marketing
Agile project management in software development	Jira AI	Task management and role assignment in the IT field. Integration with other tools (Confluence, Slack, GitHub)
A universal tool for project management in large teams	Wrike	Unlike Jira and ClickUp, it allows managing projects in any field. However, it comes at a higher cost compared to other options
Creating visual reports based on existing data	Mokkup.ai	Rapid creation of data visualisations based on existing information
Analysis of large amounts of data for forecasting and pattern identification	WEKA	Forecasting project success and stages, identifying risks and problem areas, and supporting decision-making
Visualisation and tracking of tasks for real-time team collaboration	Miro AI	Creates charts, task maps, and visualises the entire project. Integrates with Jira, Asana, Slack, and other external tools
Management of testers' work and bug tracking	Backlog	A workspace for tracking bugs
Automates routine tasks and is well-suited for creating Gantt charts	Monday	Smart automation summarises text, highlights key points, and performs translations. Makes creating Gantt charts easy
Accelerates decision-making, provides project data analytics, automates processes, and tracks individual employees' KPIs	Smartsheet	Summarises project work, generates forecasts, and can track the performance of individual employees
For group decision-making: facilitates discussion and voting	Loomio	The platform enables collaborative decision-making through structured discussions and surveys. It integrates with other tools and systems
Assessment of project participants' workload	Motion AI	Evaluates participants' workload, assigns tasks based on available hours, and optimises resources
KPI visualisation and project monitoring, creation of interactive dashboards	Tableau	Creates interactive dashboards with statistics for the entire project

Source: created by the authors based on Atlassian (n.d.), Backlog (n.d.), ClickUp (n.d.), G2 (n.d.), Loomio (n.d.), Miro (n.d.), MOGE (n.d.), Mokkup.ai (n.d.), Monday.com (n.d.), Motion (n.d.), Smartsheet (n.d.), Tableau (n.d.), WEKA (n.d.), Wrike (n.d.), M. Rebelo (2026), G. Low (2026)

The classification of AI tools was examined by distinguishing between AI-native solutions and AI-enhanced systems, as they perform different roles in project management. The following are examples of such tools. AI-native solutions (WEKA, n.d.; Motion, n.d.; Mokkup.ai, n.d.) are based on AI algorithms and are characterised by a high level of automated analysis and decision-making. They are used for analysing large data sets, machine learning, forecasting, and automatically generating recommendations. AI-enhanced systems (ClickUp, n.d.; Wrike, n.d; Monday.com, n.d.; Smartsheet, n.d.; Tableau, n.d.; Miro, n.d.; Loomio, n.d.; Backlog, n.d.) are traditional digital systems that have been subsequently integrated with AI functions. They support user work, while key decisions are made by the manager. Their functions include task management, teamwork facilitation, and document and process management.

This distinction allows for a more accurate description of the role of AI in project management. AI-native solutions generate analytical knowledge, with AI serving as the core of such systems' functioning. AI-enhanced systems provide practical applications in project planning, implementation, and monitoring, with AI performing additional or supporting functions. Thus, AI in project management operates at two levels: the intellectual and analytical level (provided by AI-native solutions – analysis, forecasting,

recommendations) and the organisational and managerial level (implemented by AI-enhanced project management systems and platforms – process organisation, team coordination). The study examined the classification of AI tools based on their functional roles in project management, revealing how different solutions support specific stages and processes across the project lifecycle. The proposed technological and software solutions (Table 1) were shown to exert a targeted influence on key project management parameters – namely time, cost, and quality – through the implementation of specialised functional mechanisms at each stage. Overall, the findings demonstrate that AI tools form an integrated system that enhances both the analytical and operational dimensions of project management, augmenting rather than replacing the role of the project manager.

At the initiation stage, the project manager defined project objectives, identified stakeholders, and facilitated early discussions. Project management platforms supported the structuring of initial project frameworks, role allocation, and coordination of early workflows. In parallel, collaboration enabled structured communication, collaborative idea generation, and visual representation of project concepts. These functionalities reduced ambiguity in project scope, improved decision-making quality, and indirectly contributed to cost control by preventing scope creep at later stages. During the planning stage, the project manager focused on developing detailed schedules, allocating resources, and assessing risks. AI-enabled tools supported task structuring, workload optimisation, and predictive analytics. Additionally, platforms such as Smartsheet (n.d.) enabled forecasting and performance modelling. The use of backlog prioritisation, sprint planning, and data-driven risk assessment improved the accuracy of time estimates, enhanced cost efficiency through optimised resource allocation, and strengthened quality through risk-informed planning.

At the execution stage, the project manager coordinated team activities, ensured task completion, and maintained communication among stakeholders. Tools such as Jira (Atlassian, n.d.) and Backlog (n.d.) played a central role in workflow management, task tracking, and agile coordination. Real-time updates and integration capabilities facilitated rapid responses to emerging issues, reducing delays and associated costs. In addition, collaborative platforms such as Miro (n.d.) enhanced team interaction, while systematic bug tracking and task verification processes contributed to improved quality and accountability. During the monitoring and control stage, the project manager tracked performance, analysed progress, and implemented corrective actions where necessary. Data visualisation and analytics tools, including Tableau (n.d.), Mokkup.ai (n.d.), and Smartsheet (n.d.), enabled the monitoring of key performance indicators, forecasting, and the identification of deviations from planned schedules and budgets. These capabilities supported timely interventions, thereby mitigating time and cost overruns, while enhancing quality through continuous performance evaluation and data-driven decision-making.

At the closure stage, the project manager evaluated project outcomes, documented results, and ensured knowledge transfer. Analytical and reporting tools such as Tableau (n.d.) and Smartsheet (n.d.) facilitated the preparation of final reports, visualisation of outcomes, and synthesis of insights. This contributed to organisational learning, improved the quality of future projects, and enabled a more accurate assessment of cost performance and schedule adherence. In addition, cross-cutting tools such as Loomio (n.d.), Miro (n.d.), and Motion (n.d.) played a significant role across all stages of the project lifecycle. These solutions enhanced communication, supported collective decision-making, and optimised workload distribution, thereby simultaneously improving time efficiency, cost control, and overall project quality.

Overall, the classification demonstrated that different categories of AI tools formed an integrated system for supporting project management processes across the entire project lifecycle, with clearly identifiable roles at each stage and a direct causal relationship between their functionality and improvements in time, cost efficiency, and project quality. Together, these tools and technologies create an AI-supported project management system that covers project planning, execution, analysis, and control. When selecting AI tools for this purpose, it is important to consider a number of key factors, starting with defining clear business objectives, such as network automation, communication, task allocation or forecasting. At the same time, it is necessary to consider the team's current workflow and structure, taking into account legacy methodologies and internal organisation. It is also important to test the capabilities of new solutions to ensure their full compatibility with existing tools and lifecycles. Based on these considerations, Table 2 presents examples of AI tool combinations tailored for different types of projects, demonstrating how specific tools can be effectively linked to achieve project objectives.

Table 2. Examples of AI tool combinations for different project types

Project Type/Task	Recommended AI Tools	Description
Marketing Project Management	ClickUp + Miro + Loomio + Mokkup.ai/WEKA	ClickUp will serve as the primary workspace, while Miro and Loomio will support visualisation and decision-making, drawing on data presented through Mokkup.ai or WEKA, depending on the volume of data
Project management in creative industries	Wrike + Miro + Loomio + Mokkup.ai	Wrike will serve as the main workspace for project management in creative industries, while Miro and Loomio will be used for visualisation and decision-making support, based on data visualised with Mokkup.ai
Project management in software development	Jira + Monday + Motion.ai + Smartsheet	Jira will serve as the main workspace for software development project management, Monday and Motion.ai will automate routine tasks and optimise scheduling, while Smartsheet will provide data analytics, forecasting, and KPI tracking for each member of a team

Table 2, Continued

Project Type/Task	Recommended AI Tools	Description
Data Analysis and Forecasting	WEKA + Smartsheet	WEKA is used for data analysis and forecasting, identifying patterns and predicting outcomes, while Smartsheet translates this information into project plans
Data Visualisation & Reporting	Mokkup.ai + Tableau	Mokkup.ai is used to rapidly create visual representations of data, while Tableau transforms these visuals into interactive dashboards for project monitoring, KPI tracking, and reporting
Bug Tracking & QA Management	Backlog + Motion.ai	Backlog is used to manage testers' work and track bugs, while Motion.ai helps optimise task allocation and team workload, ensuring efficient QA management

Source: created by the authors based on Atlassian (n.d.), Backlog (n.d.), ClickUp (n.d.), G2 (n.d.), Loomio (n.d.), Miro (n.d.), MOGE (n.d.), Mokkup.ai (n.d.), Monday.com (n.d.), Motion (n.d.), Smartsheet (n.d.), Tableau (n.d.), WEKA (n.d.), Wrike (n.d.), M. Rebelo (2026), G. Low (2026)

Taking into account the specifics and type of projects, it is possible to combine different tools (Table 2). Developers continue to create new AI tools and improve existing ones, increasing the efficiency of specific areas of project management. Methods are being developed to integrate AI tools for use by managers to automate many routine business processes, eliminate management uncertainty (time, cost, quality, and resources), ensure accurate decision-making, and improve overall project success. They combine information and engineering developments, as well as the integration of knowledge in the field of organisation and management. This requires a strategic approach to managing business processes using AI tools, attention to data protection, ethical aspects of application, and personnel training (training managers and company specialists). Moreover, particular attention should be paid to the potential risks.

F. Abuamria *et al*. (2024) also drew attention to the risks associated with data security and job security. The authors emphasised that technologies such as AI, cloud services, big data, data transfer, and digital collaboration platforms enable organisations to manage projects effectively across countries and time zones. Their findings indicated that these technologies significantly improve the efficiency of project planning, implementation, and communication. However, they also create new challenges, particularly in the areas of intercultural communication and the development of soft skills. This has created a need for project managers to acquire new technological competencies and for organisations to invest in continuous training to ensure the development of information technology. Researchers discuss barriers and strategies to overcome these obstacles in AI implementation. According to A. Kiani (2024), AI plays a key role in managing entrepreneurial projects, improving planning, forecasting, and decision-making processes in conditions of high uncertainty and resource constraints. The author examined the role of AI in strategic and tactical projects, proposed a conceptual model for using AI to optimise project management, and produced a paper that provides a foundation for further study of its application. The researcher also noted barriers and strategies for mitigating limitations in the implementation of AI. Researchers M. Méndez-Suárez *et al*. (2025) noted that the spread of AI technologies in the workplace has created a phenomenon called "FOMO" – a level of tension or fear among workers about missing out on opportunities associated with the use of AI. This phenomenon in workers' professional behaviour, which has stimulated their exploration of AI technologies, has simultaneously led to increased stress, psychological strain and professional insecurity. Thus, the implementation of AI in organisations requires not only technological but also management solutions aimed at supporting employees and maintaining a balanced work environment.

D. Herath *et al*. (2025) analyse the use of different types of AI tools in business management education. The study focuses on generative language models, AI-powered content retrieval systems and text paraphrasing tools. The study examines the ecosystem of AI tools, including content generation, transformation and retrieval, to compare the effectiveness of AI and humans in performing business management tasks. The authors used an exploratory qualitative design with comparative text analysis, including the generation, evaluation and detection of AI-generated essays alongside human works, as well as the use of tools for assessing the quality and identifying AI content in the educational environment. This approach allowed for a comprehensive comparison of the performance of modern large language model systems with that of humans in standardised educational assessments. The researchers noted that, although AI tools can effectively solve a number of business management and process learning tasks, they are unable to fully utilise the human factor. AI has demonstrated high performance in information processing, data analysis and automation of routine processes, but important aspects such as critical thinking, creativity, emotional intelligence and ethical decision-making remain the domain of humans.

Data privacy, information security, and maintaining human oversight remain essential considerations. D. Vergara *et al*. (2025) conducted a large-scale bibliometric analysis of publications over the past 10 years, focusing on the main thematic areas of AI use in project management, including embedded machine learning, decision support, information management, and resource optimisation. The authors concluded that the integration of AI into project management has fundamentally transformed the processes of project planning, execution, and control, and has become a promising area for improving project management effectiveness. According to the authors, AI has not only expanded the toolkit of project managers but also shaped new promising areas of research and practical training in project management. The conclusions drawn by the scholars in the reviewed studies align with the observations

made in this research. To provide a more comprehensive and structured evaluation of the implementation of AI in project management, a SWOT analysis was conducted and complemented by an expanded discussion of implementation barriers and the transformation of the project manager's role within the "Augmented PM" concept (Table 3).

Table 3. SWOT analysis of AI implementation in project management

Strengths	Weaknesses
Improved accuracy of forecasting (costs, timelines, risks) through advanced data processing and machine learning. Automation of routine tasks, increasing efficiency and reducing managerial workload. Enhanced decision-making through analytical and decision support systems. Real-time monitoring, resource optimisation, and improved coordination of project teams. Support for digital transformation and interdisciplinary project environments.	Limited adaptability of AI models to dynamic and uncertain project environments. Dependence on the quality, availability, and consistency of data. Limited transparency and explainability of AI systems ("black box" issue). Fragmented integration of AI tools across project lifecycle stages. Underutilisation of advanced AI tools in practical applications.
Opportunities	**Threats**
Integration with emerging technologies (IoT, blockchain, cloud computing) to enhance project performance. Development of AI-native and AI-enhanced systems tailored to industry-specific needs. Expansion of AI applications in predictive analytics, automation, and decision-making. Increased efficiency through the combined use of multiple AI tools. Growing demand for new competencies, including AI literacy among project managers.	Data privacy and cybersecurity risks associated with AI adoption. Ethical concerns, including algorithmic bias and accountability challenges. Organisational resistance to change and low levels of digital readiness. "FOMO" (fear of missing out), contributing to employee stress and professional insecurity. Over-reliance on AI, potentially weakening critical thinking and human judgement.

Source: created by the authors

The SWOT analysis (Table 3) demonstrated that AI offered substantial advantages in improving project efficiency, decision-making, and automation, while also presenting notable limitations related to technical constraints, data dependency, and integration challenges. At the same time, significant opportunities were identified in the expansion of AI applications and integration with other digital technologies; however, these were accompanied by critical threats, including data security risks, ethical concerns, and the psychological impact on employees. This structured evaluation provided a holistic understanding of AI implementation in project management and supported more informed managerial decision-making. Thus, the study demonstrated the growing role of AI in modern project management. AI, along with blockchain and the Internet of Things (IoT), is being applied in various sectors under conditions of globalisation – for instance, in construction, energy, healthcare, and information technology. The results show that these technologies significantly enhance planning, execution, and communication efficiency in projects. However, they also introduce new challenges, particularly in intercultural communication and the development of interpersonal skills. This creates the need for project managers to acquire new competencies and for organisations to invest in continuous learning to ensure effective technology adoption. Further research in the development and implementation of AI tools is becoming increasingly important for fully use its potential to improve the efficiency and success of real-world management projects.

CONCLUSIONS

The study confirms that AI is becoming an important component of modern project management and is being actively integrated into different stages of the project lifecycle. The analysis demonstrated that AI technologies can significantly enhance project planning, implementation, monitoring and reporting processes. Through the processing of large datasets and the use of machine learning algorithms, AI improves the accuracy of forecasting, supports decision-making, optimises resource allocation and enables more effective monitoring of project performance. As a result, organisations gain opportunities to increase productivity, transparency and the overall efficiency of project activities, while also achieving improvements in time management, cost optimisation and quality of outcomes. A key contribution of the study lies in demonstrating the capabilities of AI and the practical potential of its tools to enhance project management processes across diverse application contexts. The study demonstrates that the effectiveness of AI adoption increases when tools are selected according to their functional roles and combined to create integrated management environments. In this context, the distinction between AI-native solutions and AI-enhanced systems allows for a clearer understanding of how AI operates within project management structures.

AI-native solutions primarily perform analytical and forecasting functions, while AI-enhanced platforms support organisational coordination, task management and collaboration within project teams. The proposed

classification of AI tools and examples of their functional combinations illustrate how different technologies can complement each other and create a synergistic system that supports the main stages of the project lifecycle. At the same time, the study highlights several challenges related to the implementation of AI in project management. These include technical limitations of algorithms, the need for high-quality data, organisational readiness for digital transformation, as well as ethical and security considerations. Effective integration of AI technologies therefore requires continuous staff training, the development of digital competencies among project managers and the establishment of appropriate organisational and technological infrastructures. Future research may focus on the empirical evaluation of AI tool effectiveness in different industries, the development of integrated AI-based project management frameworks and the exploration of human-AI collaboration models that ensure both technological efficiency and sustainable organisational development.

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Штучний інтелект в управлінні проектами

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Анотація. Штучний інтелект (ШІ) надає допомогу на всіх етапах реалізації проєкту – від планування до досягнення конкретних результатів та прибутку. Тому моделювання практичного застосування інструментів ШІ для виконання різних рутинних та управлінських завдань стає дедалі актуальнішим. Метою даного дослідження було вивчення ролі штучного інтелекту та потенціалу його інструментів у сфері управління проєктами. Основними методами дослідження були якісний аналіз наукових публікацій, документів, спостережень та веб-контенту, а також порівняльний аналіз, узагальнення, синтез і системно-логічний аналізи. Проаналізовано наукові публікації за 2021-2025 роки з теми дослідження та систематизовано дослідження щодо використання штучного інтелекту в менеджменті. Було вивчено веб-сайти компаній, що розробляють інструменти ШІ, а також авторитетних міжнародних організацій, які проводять навчання з управління проектами. Було проаналізовано інструменти ШІ, розроблені провідними постачальниками, та порівняно їхні ключові характеристики та функціональні можливості. Також було розглянуто низку інструментів штучного інтелекту, які можуть бути ефективно застосовані в бізнесі залежно від типу проєкту. Було визначено функціональність кожного інструменту та його можливості щодо виконання конкретних завдань у різних типах проєктів. Вивчено класифікацію інструментів на основі типів та цілей проєктів. У завершенні представлено інструменти штучного інтелекту та можливі комбінації декількох таких інструментів, які можна рекомендувати для практичного застосування. Практична цінність результатів дослідження полягає в можливості їх використання менеджерами та фахівцями для оптимізації проектної роботи

Ключові слова: етапи реалізації проекту; інструменти штучного інтелекту; технології штучного інтелекту; оцінка ефективності; тип проекту; завдання управління проектами