"Artificial intelligence in project management: A bibliometric analysis"

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ARTICLE INFO	Nurkhat Ibadildin, Zhaxat Kenzhin, Gaukhar Yeshenkulova, Rymkul Ismailova, Assel Nurguzhina, Samalgul Nassanbekova and Aiman Kadyrova (2025). Artificial intelligence in project management: A bibliometric analysis. *Problems and Perspectives in Management*, *23*(2), 252-264. doi:10.21511/ppm.23(2).2025.17
DOI	http://dx.doi.org/10.21511/ppm.23(2).2025.17
RELEASED ON	Thursday, 10 April 2025
RECEIVED ON	Sunday, 05 January 2025
ACCEPTED ON	Friday, 21 March 2025
LICENSE	This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC "Consulting Publishing Company "Business Perspectives"
FOUNDER	LLC "Consulting Publishing Company "Business Perspectives"

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
31	5	0

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BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

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ARTIFICIAL INTELLIGENCE IN PROJECT MANAGEMENT: A BIBLIOMETRIC ANALYSIS

Received on: 5th of January, 2025
Accepted on: 21st of March, 2025
Published on: 10th of April, 2025

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Abstract

This study explores the integration of artificial intelligence (AI) into project management through a bibliometric analysis of scholarly publications and patents from 2001 to 2024. The paper aims to identify key trends, emerging applications, and global contributions to this evolving field. The study analyzes 51,752 patents from Lens, 5.5 million scholarly records from Google Scholar, and 436,380 records from Web of Science, providing a comprehensive overview of AI's impact on project management. The analysis maps the evolution of AI-driven project management practices, focusing on resource allocation, risk management, and scheduling optimization. The findings reveal a substantial increase in AI-related project management research, with China and the United States leading in research output. A notable surge in publications post-2019 suggests acceleration due to the COVID-19 pandemic and the growing demand for digital transformation in project execution. Despite the rising adoption of AI in project management, research gaps persist, particularly in interdisciplinary methodologies, practical AI applications, and ethical concerns related to algorithmic decision-making. This study contributes to understanding AI's transformative role in project management and highlights future research directions to enhance AI adoption for improved efficiency, decision-making, and project performance. The findings underscore the need for continued exploration of interdisciplinary approaches, practical implementations, and ethical considerations to foster innovation and efficiency in AI-driven project management.

Keywords AI-driven decision-making, resource allocation, digital collaboration, productivity enhancement, risk management, scholarly articles, COVID-19, ethical considerations, machine learning

JEL Classification C80, M15, O33

INTRODUCTION

The rapid evolution of artificial intelligence (AI) has significantly impacted various industries, including project management. As organizations increasingly prioritize efficiency, resource optimization, and risk mitigation, AI-driven tools have emerged as transformative solutions. Machine learning algorithms, predictive analytics, and automated scheduling systems are being integrated into project management processes to enhance data-driven decision-making and improve overall project performance. These advancements are reshaping traditional project execution models, enabling greater accuracy, adaptability, and efficiency in managing complex projects.

Despite the promising benefits of AI in project management, several challenges persist, particularly in the practical implementation of AI-driven methodologies, interdisciplinary integration, and ethical considerations surrounding algorithmic decision-making. The surge in AI research and applications, especially post-2019, underscores the

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Conflict of interest statement:
Author(s) reported no conflict of interest

http://dx.doi.org/10.21511/ppm.23(2).2025.17

growing demand for AI-powered project management solutions. However, a comprehensive bibliometric analysis that maps the global research landscape, identifies prevailing trends, and highlights existing gaps in AI adoption within project management remains lacking.

1. LITERATURE REVIEW

Project management is a multifaceted discipline involving meticulous planning, execution, and control to achieve successful outcomes. Traditionally, project managers have relied on their experience, intuition, and analytical skills to navigate the complexities of project management. However, the advent of artificial intelligence (AI) is fundamentally reshaping project management. AI offers advanced computational tools capable of analyzing large datasets, detecting patterns, and generating predictive insights to enhance project execution and efficiency (Shoushtari et al., 2024; V. Maphosa & M. Maphosa, 2022).

AI-based tools help project managers minimize cost overruns, predict risks, and streamline workflows. Studies have demonstrated that AI-driven project management information systems improve real-time decision-making by utilizing advanced algorithms (Khatib & Falasi, 2021). AI technologies, such as machine learning, fuzzy logic, and artificial neural networks, are increasingly applied to risk assessment and project forecasting (Wauters & Vanhoucke, 2016). The rise of AI-powered decision support systems highlights the growing role of AI in complex project management tasks (Ruiz et al., 2021). For example, AI-based resource allocation tools can analyze large datasets to optimize resource use, reducing project completion times and costs (Auth et al., 2021; Shoushtari et al., 2024). Similarly, AI-based risk prediction models can identify potential risks early in the project lifecycle, allowing project managers to take proactive measures to mitigate them, thus minimizing project delays and cost overruns (Shoushtari et al., 2024; Shoushtari et al., 2023).

AI integration into public sector management and talent acquisition frameworks has optimized operations and streamlined workforce planning (Barodi & Lalaoui, 2025; Khan et al., 2024). Additionally, AI plays a crucial role in customer journey mapping and business decision-making, leveraging big data analytics to refine project management strategies and improve client engagement (D'Arco et al., 2019). AI-powered business intelligence systems further enhance real-time forecasting, enabling organizations to identify emerging trends and make data-driven decisions more accurately (Han et al., 2022). Furthermore, AI's growing application in sustainability-driven decision-making ensures ethical governance, minimizes algorithmic bias, and fosters responsible project execution, reinforcing its role in ethical AI implementation (Makridakis, 2017).

Furthermore, AI can streamline project planning processes by automating project network creation and optimizing schedules with limited resources. With AI, project managers can make faster, more informed decisions, leading to improved project outcomes (Fridgeirsson et al., 2021; Foster, 1988). Additionally, AI-supported project management information systems can provide valuable insights and recommendations to project managers, facilitating more effective decision-making and performance monitoring (Tarafdar et al., 2019; Khatib & Falasi, 2021). The role of AI in employee engagement and productivity also demonstrates its applicability in enhancing team dynamics and outcomes in complex management environments (Arslan et al., 2022; Gusti et al., 2024). Shamim (2024) highlights the potential of AI in enhancing stakeholder communication and resource management, emphasizing its transformative impact on traditional workflows.

Despite the potential benefits, integrating AI into project management is not without its challenges. One major obstacle is the lack of knowledge and understanding of AI among project managers and stakeholders. Many organizations find it challenging to comprehend the intricacies of AI technology and its application in project management (Fridgeirsson et al., 2021; Foster, 1988). Implementing AI systems can also be time-consuming and costly, requiring significant investments in infrastructure, training, and personnel.

Ethical and regulatory considerations related to AI use in project management must also be addressed. Data privacy, algorithmic bias, and accountability for AI-based decisions need careful regulation to ensure the ethical and responsible use of AI in project management (Khatib & Falasi, 2021; Maleszak & Zaskórski, 2015). The regulatory framework may also lag the rapid development of AI technologies, creating legal challenges and uncertainties for organizations implementing AI in project management. Daugherty and Wilson (2018) highlight the importance of balancing human skills with AI capabilities to ensure ethical and efficient integration of technologies.

Another challenge is potential resistance to change within organizations. Project managers and team members may be reluctant to adopt AI-based tools and processes due to fears of job loss or loss of control. Overcoming this resistance requires effective change management strategies and clear communication of AI's benefits for enhancing project efficiency and productivity (Makridakis, 2017; Fridgeirsson et al., 2021). Despite the automation of certain tasks, project management requires a combination of technical expertise, interpersonal skills, and strategic thinking unique to humans. Empathy, emotional intelligence, negotiation, and conflict resolution are crucial for effective project leadership and stakeholder management (Wauters & Vanhoucke, 2016; Fridgeirsson et al., 2021). AI does not replace project managers but is seen as a tool to enhance their capabilities and support decision-making processes (Fridgeirsson et al., 2021; Munir, 2019).

While AI has significantly advanced project management, several critical research gaps remain. First, interdisciplinary research is needed to explore AI's intersection with behavioral and organizational sciences to enhance adoption and usability (Van Eck & Waltman, 2010). Second, greater attention should be given to the ethical implications of AI-driven decision-making, particularly concerning transparency, fairness, and accountability (Daugherty & Wilson, 2018). Third, future studies should examine AI's role in adaptive project management methodologies, especially in complex and rapidly evolving environments (Serrador & Pinto, 2015). Additionally, integrating AI with emerging technologies such as blockchain and IoT could unlock new opportunities for improving project efficiency (Ahmed et al., 2022). Lastly, the growing field of explainable AI (XAI) aims to enhance transparency in AI-generated project decisions, ensuring ethical implementation and mitigating biases in AI-driven recommendations (Shamim, 2024).

Looking ahead, AI is poised to revolutionize project management by democratizing access to advanced tools and methodologies. Small and medium-sized enterprises (SMEs) stand to benefit from AI-driven solutions that enhance decision-making and streamline project execution (Fridgeirsson et al., 2021; Munir, 2019). AI's ability to facilitate real-time collaboration and automate administrative processes will likely result in more agile and adaptive project management frameworks (Ruiz et al., 2021). By leveraging AI-generated insights, project managers can make more informed decisions and achieve continuous project and organizational improvement (Fridgeirsson et al., 2021; Frank et al., 2019). These advancements could create a more adaptive and resilient project management landscape, capable of addressing future challenges and uncertainties. Furthermore, the development of AI-powered virtual assistants for project managers could provide intelligent recommendations, enhancing overall project efficiency (Foster, 1988). Finally, regulatory frameworks must evolve alongside AI advancements to ensure ethical and responsible AI implementation in project management practices (Shamim, 2024).

Bibliometric reviews provide a quantitative approach to analyzing the vast amount of literature in a specific field. These reviews utilize statistical and computational methods to map research trends, publication patterns, and the impact of various works, authors, and institutions. In the context of AI in project management, bibliometric reviews can reveal how AI technologies are being adopted in project management practices and their impact on project outcomes. Bibliometric reviews have been extensively applied to map research landscapes, including the integration of AI in project management. These reviews provide insights into the adoption of AI technologies in project management and their effects on project outcomes.

One significant bibliometric review by V. Maphosa and M. Maphosa (2022) extracted 106 articles from the Web of Science database published between 2012 and 2021 and analyzed the data to un-

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derstand AI's role in project management. Their study focused on various AI applications, including risk management, resource allocation, and scheduling, highlighting AI's transformative potential in project management. A bibliometric review by Serrador and Pinto (2015) explored the relationship between project planning and success, highlighting the increasing role of AI in enhancing planning processes. Similarly, Huesig and Endres (2019) analyzed the application of AI in different project management phases, such as risk management and resource allocation. These reviews underscore the growing body of knowledge at the intersection of AI and project management and provide a comprehensive understanding of the advancements and challenges in this area.

Despite their benefits, bibliometric reviews face several challenges. A primary limitation is the dependency on available data, which can be incomplete or biased toward certain publications and databases. Citation practices vary across disciplines, affecting the accuracy of impact assessments. Additionally, the rapidly evolving nature of AI and project management fields can quickly render some analyses outdated. D'Arco et al. (2019) and Gusti et al. (2024) have further validated the utility of AI in optimizing workflows and improving employee engagement, which are critical aspects of modern management practices. These insights align with the broader trends in project management, where AI is increasingly recognized as a driver of innovation and productivity.

Bibliometric reviews are a powerful tool for synthesizing and analyzing the extensive body of literature in any given field. In the context of AI in project management, these reviews offer valuable insights into the development, trends, and influential works in the domain. By employing various bibliometric techniques, researchers can map the intellectual landscape, identify key themes and gaps, and guide future research directions. As AI continues to evolve and integrate with project management, ongoing bibliometric reviews will be crucial in understanding and shaping the trajectory of this interdisciplinary field.

Several recent studies provide additional insights into the transformative role of AI in project management, expanding the understanding developed in this review. Ruiz et al. (2021) offer a comprehensive framework aligning AI functionalities with the PMBOK guidelines, particularly enhancing cost management, risk assessment, and collaboration. Noponen (2019) further analyzed AI's adaptability to traditional project management frameworks, revealing significant improvements in efficiency and flexibility. Shamim (2024) highlights ethical challenges such as algorithmic bias, accountability, and privacy, stressing the necessity of robust regulatory frameworks. Shamim (2024) explores AI's role in predictive analytics, emphasizing its capacity to optimize project timelines and mitigate risks. Choquehuanca-Sánchez et al. (2024) explore the potential of integrating AI with technologies such as IoT and blockchain to drive innovative solutions for longstanding project management challenges. Daugherty and Wilson (2018) provide critical perspectives on balancing human expertise with AI's capabilities.

The extensive body of research on artificial intelligence and its application in project management reveals significant insights but also highlights areas that remain underexplored. While numerous systematic literature reviews and bibliometric analyses have been conducted, these methodologies have inherent limitations, which point to the need for further investigation in certain areas. Systematic literature reviews are known for their in-depth analysis of specific research questions, often involving a critical evaluation and synthesis of a relatively small number of studies. This approach, as seen in studies by Moher et al. (2015) allows for a thorough understanding of a narrowly defined topic. However, the narrow focus of systematic literature reviews may overlook broader trends and emerging areas within the field of AI in project management.

On the other hand, bibliometric reviews aim to provide a broader scope of literature by analyzing large datasets to identify overarching trends and priority research areas. Cobo et al. (2011) and Van Eck and Waltman (2010) demonstrate the effectiveness of bibliometric methods in mapping extensive bodies of literature. These reviews provide a macro-level view of the research landscape but often lack the depth and detailed analysis that systematic literature reviews offer. Recent advancements in bibliometric analysis techniques have started to address this gap between breadth and depth. Modern bibliometric methods, such as keyword analysis, co-occurrence analysis, and the use of machine learning to identify latent patterns in textual data, offer deeper insights within broad datasets. For instance, Han et al. (2022) and Mariani (2020) underscored the potential of these advanced techniques to uncover nuanced understandings from extensive literature collections.

The overall aim of this study is to investigate the development, current landscape, and future directions of artificial intelligence (AI) applications in project management (PM) through a bibliometric analysis. Specifically, the study seeks to identify leading contributors, major thematic areas, and research gaps that can inform both academic inquiry and practical implementation. Within this context, the literature review aims to examine existing scholarly contributions, provide conceptual clarity, and establish a foundation for understanding how AI is shaping the evolution of project management practices.

2. METHOD

The data were collected from three major academic databases: Lens, Web of Science, and Google Scholar. These databases were selected for their extensive coverage of scholarly publications, patents, and gray literature. Lens.org provided access to a wide range of academic papers and patents, particularly those linking AI with project management. Web of Science ensured the inclusion of high-quality, peer-reviewed articles due to its rigorous indexing standards. Google Scholar captured gray literature and additional scholarly work not indexed in Lens and Web of Science, offering a broader perspective. The search strategy employed specific keywords, such as "artificial intelligence" and "project management," and applied filters to limit results to publications from 2001 to 2024. This timeframe reflects the evolution of AI applications in project management during the digital transformation era.

The selected data underwent rigorous bibliometric analysis using tools such as VOSviewer and R to visualize trends, networks, and co-occurrences. Descriptive analysis included calculating the number of publications per year, distribution across journals, and identifying prolific authors and institutions. Trend analysis examined shifts in research focus over time, identifying emerging themes and technologies. Citation mapping highlighted influential studies and their impact on the field.

While the selected databases provided comprehensive coverage, limitations exist. Google Scholar's broad indexing includes gray literature, which may lack the quality control of Web of Science. Additionally, the reliance on English-language publications may exclude relevant non-English research. By leveraging multiple databases and employing rigorous analytical techniques, this study provides detailed insights into the integration of AI in project management. The findings aim to contribute meaningfully to the academic discourse, identify trends, and highlight areas for future research.

3. RESULTS

The keyword analysis aimed to quantify the prevalence of research and patents related to AI in project management across different databases. The Lens database revealed a total of 51,752 patent records, with 50,830 of these records falling within the period from 2001 to 2024. This indicates a significant and consistent interest in patenting AI technologies relevant to project management over the past two decades. In Google Scholar, the total number of results for AI in project management is an astonishing 5,500,000, underscoring the extensive academic interest in this domain. When focusing on the period from 2004 to 2024, the count narrows down to 43,800 results. This suggests a substantial amount of research has been conducted in recent years, reflecting the evolving nature of AI technologies and their application in project management.

The Web of Science Core Collection shows 436,380 results from 2001 to 2024, with 373,528 results specifically from 2004 to 2024 (see Figure 1). This trend aligns with the other databases, indicating a significant concentration of research activities in recent years. The convergence of high numbers across different databases underscores the burgeoning interest and rapid development in

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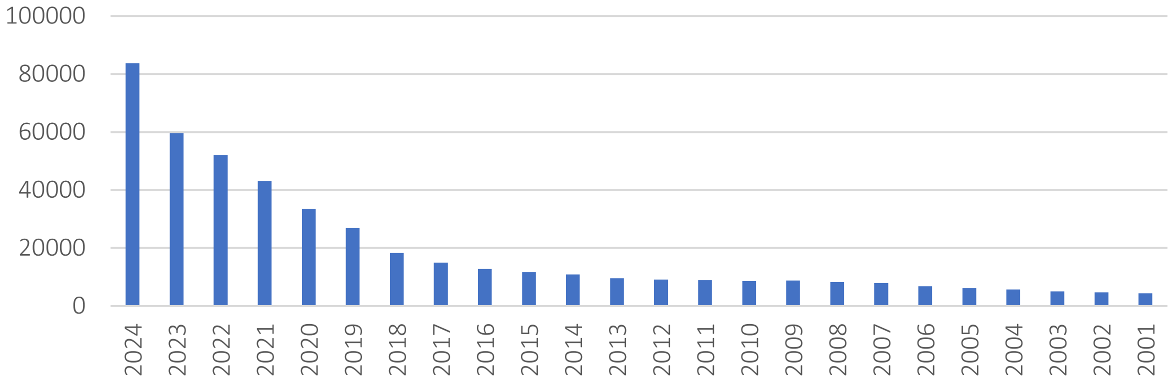

Figure 1. Publication dynamics from 2001 to 2024, based on data from the Web of Science

integrating AI into project management. Figure 5 visualizes interconnected themes, highlighting core areas such as resource management and optimization.

The analysis of publication years provides insight into how research output has evolved over time. The Web of Science Core Collection data revealed a steady increase in publications related to AI in project management, particularly from 2019 onwards. The year 2023 alone accounts for 14.952% of the total publications, highlighting a peak in research activity. This surge is likely driven by advancements in AI technologies and their growing applicability in project management. The publication trends also show a notable rise in research output during the COVID-19 pandemic years (2020 and 2021). This period saw an acceleration in digital transformation across industries, including project management, as organizations sought innovative solutions to adapt to the changing work environment. The pandemic acted as a catalyst, pushing researchers to explore AI-driven approaches to enhance project management efficiency and effectiveness.

The Web of Science Core Collection's analysis of document types reveals that most of the records are articles, making up 69.131% of the total (see Figure 2). This is followed by proceeding papers at 21.016% and review articles at 6.330%. The high percentage of articles indicates that peer-reviewed journal publications are the primary medium for disseminating research findings. Proceeding papers, often associated with conferences, reflect the dynamic nature of the field, where emerging ideas and preliminary findings are frequently presented. Review articles, although fewer in number, play a crucial role in synthesizing existing knowledge and identifying future research directions. Other document types, such as editorial materials, early access articles, meeting abstracts, and book chapters, contribute smaller percentages but still reflect the diverse ways research is communicated. The presence of retracted publications, although minimal, underscores the importance of maintaining rigorous standards in academic research.

The institutional analysis revealed that the Chinese Academy of Sciences is the leading institution in record count, followed by the University of California system and the Centre National de la Recherche Scientifique (CNRS) in France. This distribution reflects the global research landscape, with significant contributions from Asia, North America, and Europe. The dominance of Chinese institutions aligns with the trend observed in the author analysis, reinforcing China's pivotal role in advancing AI research. Leading institutions from the United States, such as Harvard University and the University of California, also play a critical role, highlighting the competitive and collaborative nature of global AI research. The presence of institutions from various regions emphasizes the widespread recognition of the importance of AI in project management. These institutions not only contribute to the development of AI technologies but also drive their application in real-world project management scenarios (see Figure 2).

The analysis of research areas and categories provides insight into the primary focus within the field of AI in project management. Engineering and computer science are the lead-

Source: Compiled by authors based on Tableau.

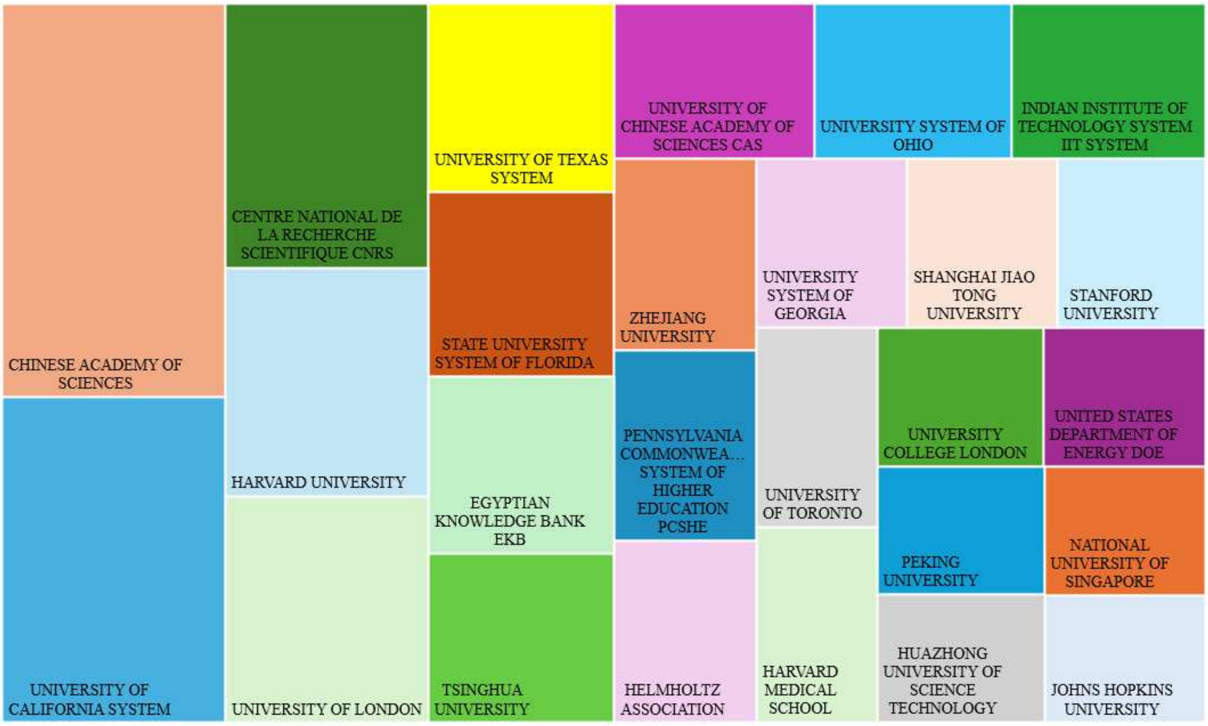

Figure 2. List of institutions by published articles

ing research areas, accounting for 24.374% and 21.463% of the total publications, respectively. This dominance reflects the technical and computational foundations of AI, which are critical for developing innovative solutions in project management. Other significant research areas include chemistry, materials science, physics, environmental sciences, and telecommunications. The diversity of these areas indicates that AI in project management is a multidisciplinary field, drawing on knowledge and techniques from various scientific disciplines. Business and economics also feature prominently, reflecting the practical implications and economic impact of AI applications in project management. The integration of AI into project management processes can lead to enhanced efficiency, cost savings, and improved decision-making, making it a valuable tool for organizations across industries (see Figure 5).

The analysis of country-specific contributions provides a detailed view of which countries are leading in AI research related to project management (Figure 4). China emerges as the leading country in terms of publication count and patent records. This is consistent with the high number of prolific authors and leading institutions based in China. The country's strategic emphasis on AI research and development has positioned it at the forefront of this field.

The United States follows closely, with significant contributions in both scholarly articles and patents. American institutions such as the University of California system and Harvard University are key players in AI research. The presence of tech giants and a robust academic ecosystem in the US fosters innovation and research in AI applications for project management. European countries, particularly the United Kingdom, Germany, and France, also contribute substantially to this field. Institutions like the Centre National de la Recherche Scientifique (CNRS) in France and prominent universities in the UK and Germany are heavily involved in AI research. These countries benefit from strong government support and funding for AI initiatives. Other notable contributors include Canada, Australia, and India. These countries are emerging as significant players in AI research, driven by both academic and industry collaboration. Their contributions reflect a growing global interest in AI and its applications in project management.

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Source: Compiled by authors based on Tableau.

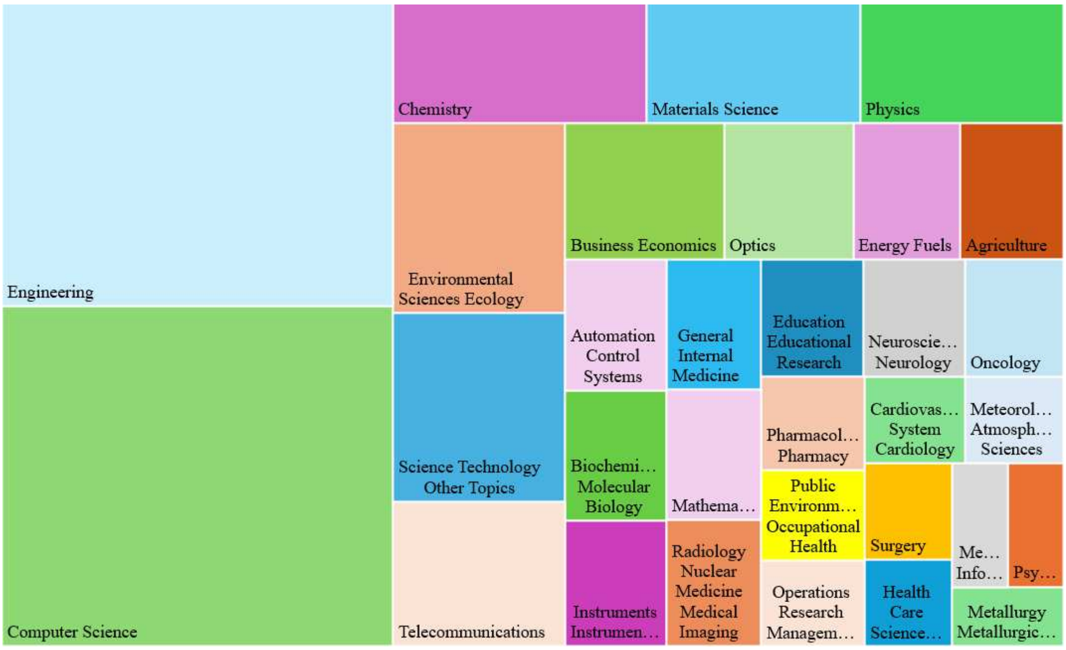

Figure 3. List of areas and categories

The international distribution of research efforts highlights the collaborative nature of AI research. Cross-border collaborations and partnerships are common, facilitating the exchange of knowledge and expertise. This global effort is crucial for advancing the field and addressing complex challenges in project management through AI.

A keyword analysis was conducted to identify the literature's most frequently occurring terms and themes. Keywords such as 'artificial intelligence,' 'project management,' 'deep learning,' 'neural networks,' 'resource management,' and 'technology adoption' dominate the domain, reflecting primary areas of focus within this

Source: Compiled by authors based on Tableau.

Figure 4. List of countries by contributions

Source: Compiled by authors based on VOSViewer.

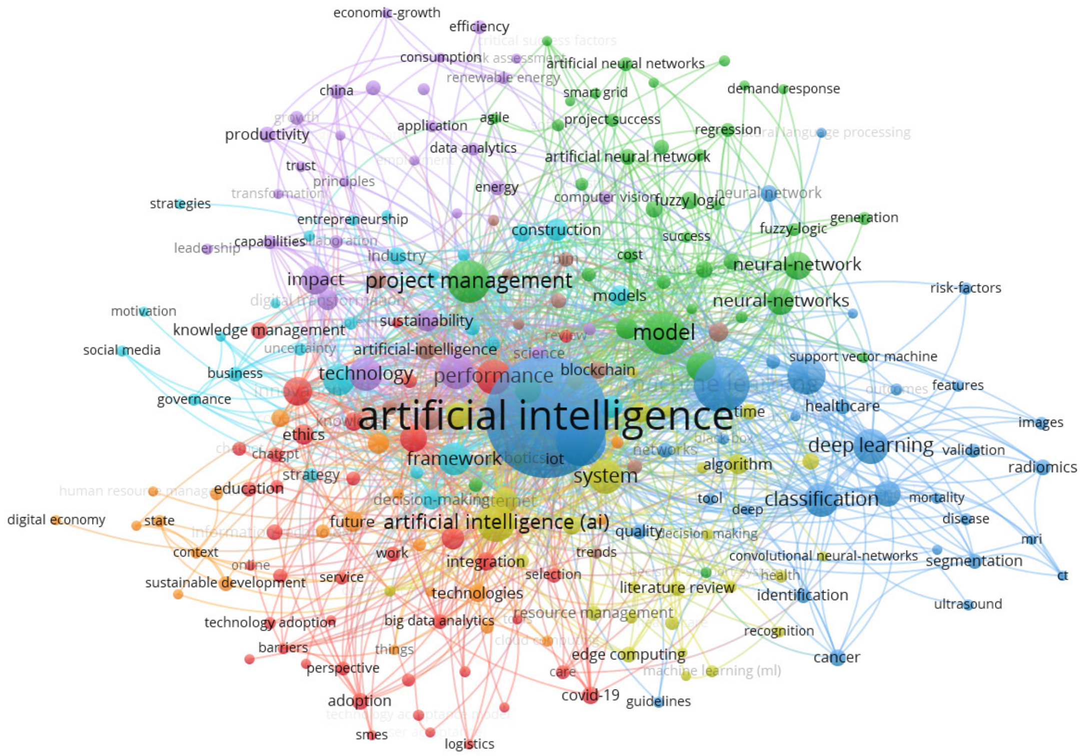

Figure 5. Network visualization map

research field. The analysis identifies a significant global interest in integrating artificial intelligence into project management, with key themes including risk management, scheduling, resource allocation, and optimization strategies. The post-2019 period shows an exponential growth in publications, partly driven by the COVID-19 pandemic, which accelerated the adoption of AI technologies to address emerging challenges.

Finally, the network visualization map (Figure 5) illustrates the interconnectedness of central themes, highlighting the robust interplay between technological advancements, theoretical models, and practical applications in artificial intelligence and project management.

The data analyzed from the Lens database, Google Scholar, and Web of Science Core Collection collectively paint a comprehensive picture of the research landscape in AI and project management. The keyword count analysis reveals the widespread and growing interest in this field, with significant volumes of patents and scholarly articles being published.

The temporal analysis of publication years highlights the accelerating pace of research, particularly in recent years. The surge in publications during the COVID-19 pandemic underscores the critical role of AI in enabling remote and efficient project management practices during times of crisis. The document type analysis suggests that peer-reviewed journal articles are the primary medium for disseminating research findings while proceeding papers and review articles also play important roles in academic discourse. The identification of prolific authors and leading institutions underscores the global and collaborative nature of research in AI and project management. The significant contributions from Chinese researchers and institutions highlight China's leadership in AI research, while institutions from the United States and Europe also play crucial roles. The analysis of research areas and categories reveals the multidisciplinary nature of AI in project management, with engineering, computer science, and business being the predominant fields. This diversity reflects the broad applicability of AI technologies and their potential to transform project management practices across various sectors. The country-specific analysis highlights the leading role of

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China and the significant contributions from the United States and Europe. The global distribution of research efforts emphasizes the importance of international collaboration in advancing AI applications in project management.

In summary, the bibliometric analysis provides a detailed and comprehensive overview of the research landscape in AI and project management. The findings highlight the significant and growing interest in this field, the accelerating pace of research, the global and collaborative nature of the research community, and the multidisciplinary focus of the research efforts. These insights provide a valuable foundation for understanding the current state of AI in project management and identifying future research directions.

4. DISCUSSION

The bibliometric analysis reveals several key insights that align with and address the research gaps identified in the literature review. The surge in publications related to AI in project management, particularly in recent years, indicates a growing recognition of the importance and potential of AI technologies in enhancing project management practices. However, despite the increasing volume of research, several critical gaps persist that warrant further scholarly attention.

The temporal analysis highlights an accelerating pace of AI and project management research, particularly during the COVID-19 pandemic (2020 and 2021). This trend underscores the critical role of AI in enabling remote and efficient project management practices during times of crisis. As V. Maphosa and M. Maphosa (2022) noted, AI has proven effective in improving operational efficiency. This current analysis expands this understanding by emphasizing AI's role in enabling remote collaboration and adaptive management during the pandemic. The significant increase in publications in 2023 suggests that this momentum is continuing, with AI technologies becoming increasingly integrated into project management practices. This aligns with the identified research gap regarding the need for real-time, adaptive project management tools that can respond to dynamic and uncertain environments.

One significant research gap identified was the limited exploration of AI's impact on the strategic aspects of project management, such as decision-making processes and long-term project planning. The keyword analysis and publication trends indicate that while there is substantial research on AI applications in project management, much of it focuses on operational efficiencies and specific AI tools rather than strategic implications. Future research should aim to bridge this gap by exploring how AI can support high-level decision-making and strategic planning in project management. Such studies could examine how AI-generated insights influence leadership decisions and long-term project success. Another gap pertains to the integration of AI with other emerging technologies in project management, such as the Internet of Things (IoT), blockchain, and big data analytics. The results show that while these technologies are often mentioned in conjunction with AI, there is a lack of in-depth studies examining their combined impact on project management. Addressing this gap will require interdisciplinary research that combines insights from AI, IoT, blockchain, and data analytics to develop comprehensive solutions for project management. For instance, Gusti et al. (2024) highlighted the potential of AI in optimizing workflows and improving productivity, which could be further enhanced through technological integration.

The significant increase in publications in 2023 suggests that this momentum is continuing, with AI technologies becoming increasingly integrated into project management practices. This aligns with the identified research gap regarding the need for real-time, adaptive project management tools that can respond to dynamic and uncertain environments. Future research should focus on developing and testing AI-driven adaptive project management tools that can enhance flexibility and responsiveness in project management.

Ethical and regulatory considerations also demand closer scrutiny. Critical issues such as algorithmic transparency, data protection, bias mitigation, and decision accountability are often mentioned but insufficiently examined. As highlighted by Shamim (2024) and Daugherty and Wilson (2018), fostering stakeholder trust in AI systems is fundamental to their acceptance. The development of standardized ethical guidelines and robust governance frameworks is essential to ensure responsible deployment in project management contexts.

Finally, international collaboration and interdisciplinary research efforts should be encouraged to drive innovation and address complex challenges in AI and project management. Researchers can develop more comprehensive and impactful solutions by leveraging the strengths of different countries and institutions.

The findings of this study have several practical implications for project managers and organizations. The increasing volume of research and patents related to AI in project management indicates a growing pool of knowledge and tools that practitioners can leverage to enhance their project management practices. Project managers should stay informed about the latest developments in AI technologies and consider integrating AI-driven tools into their workflows. The rise in publications during the COVID-19 pandemic highlights the importance of digital transformation and remote project management. Organizations should invest in AI-driven project management solutions that can support remote work and enhance collaboration in distributed teams. These solutions can help organizations adapt to changing work environments and maintain productivity during times of crisis.

The multidisciplinary nature of AI in project management suggests that organizations can benefit from a holistic approach that combines technical, business, and economic perspectives. By considering the technical capabilities of AI, as well as its economic impact and practical applications, organizations can develop more effective and sustainable project management solutions. This aligns with Barodi and Lalaoui's (2025) emphasis on change management to facilitate AI adoption in organizational contexts.

The comprehensive bibliometric analysis provides valuable insights into the research landscape of AI in project management. The findings highlight the significant and growing interest in this field, the accelerating pace of research, the global and collaborative nature of the research community, and the multidisciplinary focus of the research efforts. These insights address several identified research gaps and provide a foundation for future research directions and practical applications. Future research must continue to explore strategic applications of AI, integrate it with emerging technologies, and develop adaptive tools to address the challenges of dynamic project environments.

CONCLUSION

This study sets out to conduct a comprehensive bibliometric review of the integration of artificial intelligence (AI) in project management, with the primary objective of mapping publication trends, identifying key research contributors and themes, and uncovering critical gaps in the literature. By synthesizing insights from major academic databases and exploring the evolution of AI in project management, the study aimed to contribute to a deeper understanding of the field and to guide future research and practice.

The integration of artificial intelligence into project management is poised to revolutionize the field, offering substantial improvements in decision-making, efficiency, and productivity. The bibliometric analysis conducted in this study reveals a significant and growing global interest in the application of AI in project management, with China and the United States being the leading contributors. The data indicate a rapid increase in AI-related project management publications, particularly following the onset of the COVID-19 pandemic, which has accelerated the adoption of AI technologies as organizations adapt to new project management challenges.

Key areas of AI application in project management include resource allocation, risk management, and scheduling, each demonstrating considerable advancements and potential for further development. However, several challenges must be addressed to fully realize the benefits of AI in project management.

http://dx.doi.org/10.21511/ppm.23(2).2025.17

These include overcoming the knowledge gap among project managers, managing resistance to change within organizations, and addressing ethical and regulatory concerns.

Future research should focus on interdisciplinary integration, practical applications of AI in diverse project management contexts, and developing robust ethical frameworks to guide the responsible use of AI. Additionally, project managers need continuous education and training to enhance their understanding and ability to leverage AI technologies effectively. Continuous education and training for project managers will also be critical in equipping them to leverage AI effectively and responsibly.

In conclusion, while AI holds tremendous potential to enhance project management practices, it is essential to approach its integration thoughtfully, ensuring that human-centered values and strategic oversight remain at the forefront. This will enable organizations to harness the full power of AI while maintaining ethical standards and addressing the evolving challenges of the digital age.

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