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Marjan Angeleski
Faculty of Economics – Prilep, University St. Kliment Ohridski – Bitola
Republic of North Macedonia

marjan.angeleski@uklo.edu.mk

Olivera Kostoska
Faculty of Economics – Prilep, University St. Kliment Ohridski – Bitola
Republic of North Macedonia

olivera.kostoska@uklo.edu.mk

Cvete Dimitrieska
Faculty of Technical Sciences - Bitola, University St. Kliment Ohridski – Bitola
Republic of North Macedonia

cvete.stefanovska@uklo.edu.mk

Participation (direct/virtual):
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CAN BUSINESS BENEFIT FROM APPLYING ARTIFICIAL INTELLIGENCE TO PROJECT MANAGEMENT? EVIDENCE FROM GOOGLE SCHOLAR LITERATURE

Abstract: This article aims to identify research related to artificial intelligence (AI) and project management (PM), mainly through an analysis of Google Scholar literature selected by clearly defined search criteria. The paper also makes a systematization of areas in which businesses can benefit from the application of AI on PM activities. The results show that the number of titles containing the words "project management" & "artificial management", as well as "project management" & "AI" has increased enormously in recent years, which makes the importance of this research issue obvious.

Keywords: project management, artificial intelligence, google scholar

1. INTRODUCTION

We live in a so-called "Data-driven society" where, as a result of digitalization processes, each activity leads to the creation of data that can be used to predict trends related to our behavior, whether in everyday activities or in completing our professional tasks or business activities. These claims are supported by the predictions of Statista, whose report states that the volume of data/information created, captured, copied, and consumed worldwide in 2028 will amount to 394 zettabytes, which is as much as 15 times more compared to 10 years earlier (in 2017 this volume was 26 zettabytes) and as much as over 197 times larger volume of data compared to 2010 when it was "only" 2 zettabytes (Taylor, 2024). Since all businesses produce, collect and use data, their possession is an important source of success in solving everyday complex problems and making decisions based on experiences. Considering the above, artificial intelligence, whose functioning requires data, is gaining more and more importance every day. Such processes do not circumvent the activities related to project management where data is needed from the very identification of the issue, to the analysis and production of different scenarios for solving the defined problem. Using data, artificial intelligence redefines project management by creating opportunities for real-time decision-making, strengthening teamwork and efficiently dealing with the increased complexity and scope of projects (Ibrahim Adedeji Adeniran et al., 2024), but also in the processes of project selection and prioritization, monitoring the progress of project activities, speeding up reporting and facilitating testing (Nieto-Rodriguez & Viana Vargas, 2023). According to the announcement on the official PMI website, the not-yet-published edition of the PMBOK® Guide – Eighth Edition includes a dedicated Appendix on Artificial Intelligence for the first time, and this edition "…is the most data-driven update yet…" (Project Management Institute, 2025), which further confirms the role of AI in project management.

Taking into account these considerations, this article aims to provide a brief review of the scholarly literature related to artificial intelligence and project management and also to systematize the areas in which businesses can benefit from adopting artificial intelligence in project management. Against this backdrop, Google Scholar was used as a Web Search engine to broadly search for the relevant literature using certain search criteria. Initially, the idea was to identify publications that contained the words "project management" & "artificial management" as well as "project management" & "AI" in the title of publication, and an additional criterion was that the literature was written in English.
More specifically, the following criteria were taken into account:
C1 Publications listed on Google Scholar
C2 Publications written in English
C3 All publications published by the date of the search
C4 The words "project management" & "artificial management" should be contained in the title of the publication
C5 The words "project management" & "AI" should be contained in the title of the publication
The paper is organized into four sections including the introduction and conclusion. The section 2 defines the concepts of project, project management and artificial intelligence, while section 3 provides a brief overview of Google Scholar literature related to the impact of artificial intelligence on project management.

2. PROJECT, PROJECT MANAGEMENT AND ARTIFICIAL INTELLIGENCE

The following text will define what a project and project management are, and subsequently a definition of artificial intelligence will also be provided.

2.1. Project and Project management

There are different perspectives and interpretations when defining the term project, but they all have certain common characteristics. According to BS 6079-2:2000 Project Management Vocabulary, a project is "a unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources." (Lester, 2021, p.1). The definition provided by APM (Association for Project Management) states that, "a project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits" (APM, 2019, p.214). In its Project management body of knowledge, PMI (Project Management Institute), defines a project as "a temporary endeavor undertaken to create a unique product, service, or result" (Project Management Institute, 2021, p.4), while according to PRINCE2 "a project is a temporary situation where a team is assembled to address a specific problem, opportunity or change that is sufficiently difficult that it cannot be handled as routine ongoing work" (AXELOS, 2018, p.36). This means that every project in some way follows defined components such as timeframe, budget, activities, requirements, uniqueness, quality, etc. that lead to a specific result.
Project management, as a discipline directly related to projects, is defined as the application of knowledge, skills, tools and techniques to project activities to meet project requirements and achieve planned results (Project Management Institute, 2021). According to APM, project management includes "the application of processes, methods, knowledge, skills and experience to achieve specific objectives for change" (APM, 2019, p.214), while PRINCE2 defines it as "the planning, delegating, monitoring and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risk" (AXELOS, 2017, p.35). All these definitions indicate that project management is a special concept of management and the application of methods of planning, organizing and controlling with the intention of allocating all resources necessary for the efficient execution of the project and achieving its defined objectives, taking into account various aspects of the project.
Hence, it is necessary to examine the role of AI in project management, or how various aspects of project management can be optimized or automated in order to improve the success of project activities.

2.2. Artificial Intelligence

The term artificial intelligence (AI) refers to a machine or computer-based system that, based on data, has the ability to demonstrate intelligent behavior and, for certain human-defined objectives, to make predictions, provide recommendations, or make certain decisions (Boucher, 2020; Johnson Eddie Bernice, 2021). Although AI includes a large number of subfields that have an impact on almost all segments of human life, efficiency improvement and human capabilities augmentation, there are still six broad categories that are particularly worth mentioning such as: Machine Learning (ML), Neural Networks (NN), Deep Learning (DL), Robotics, Computer Vision (CV), and Natural Language Processing (NLP) (Athanasopoulou et al., 2022; Angeleski & Kostoska, 2022; Angeleski & Kostoska, 2023; Kostoska et al., 2024) some of which can also contribute to project management.

3. GOOGLE SCHOLAR LITERATURE ON THE IMPORTANCE OF AI FOR PM AND THE RELATED BENEFITS FOR BUSINESSES

Although artificial intelligence has been widely discussed in recent years, and its application in project management is even more specific, the first publications on Google Scholar related to these search criteria were published as early as 1987. More specifically, a total of 475 publications were listed that contained the terms "project management" & "artificial management" or "project management" & "AI" in the title of the publication. The frequency of publication of the scholarly literature by year is shown in Figure 1.

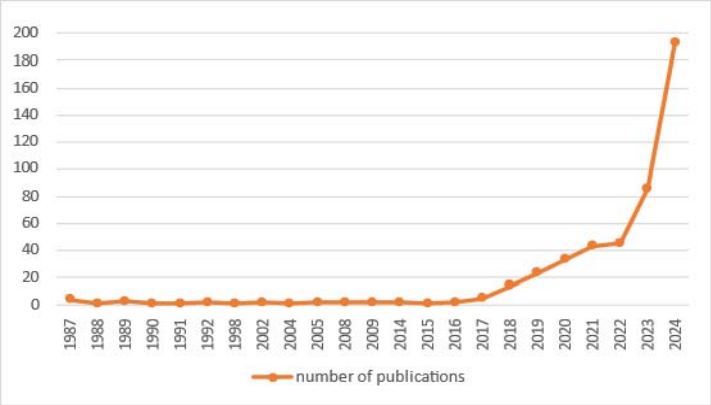

Figure 1: Number of publications with "Artificial intelligence or AI" and "Project management" in the title, by year (Google Scholar 1987 - 2024)
Source: Author's calculation based on Google Scholar data

The number of scholarly literatures until 2017 is almost imperceptible with a maximum of 5 publications recorded per year, but the increase is evident especially in the last few years, reaching a peak in 2024 when a total of 193 publications were published. Analyses show that in the last five years (from 2020 to 2024) a total of 400 publications or 85.3% of the total number of publications with these terms in the title have appeared in Google Scholar search results (in 2025, as of 11.01.2025, a total of 6 publications have been displayed).

Table 1: Number of publications with "Artificial intelligence or AI" and "Project management" in the title and number of citations (Google Scholar 1987 - 2024)

Number of citations	Number of publications	Citations (%)	Cumulative number of citations	% of total publications
30+	26	50.73%	50.73%	5.47%
10-29	49	28.48%	79.21%	10.32%
1-9*	183	20.79%	100%	38.53%
0**	217	0%	100%	45.68%
	475	100%		100%

Source: Author's calculation based on Google scholar data
*This number includes a publication published in 2025
**This number includes five publications published in 2025

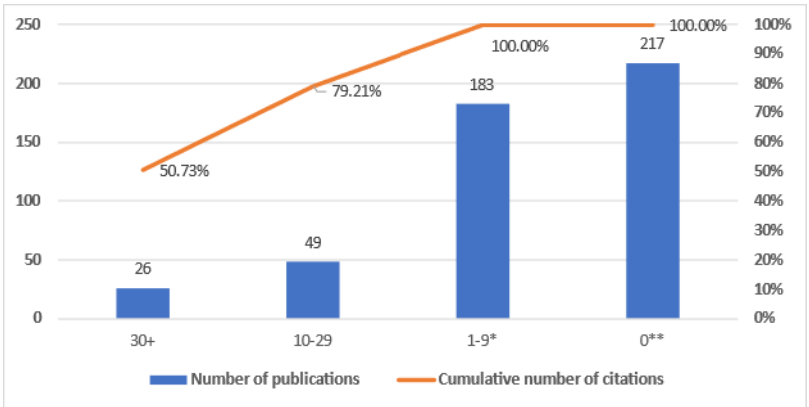

Figure 2: Number of publications with "Artificial intelligence or AI" and "Project management" in the title and cumulative number of citations (Google Scholar 1987 - 2024)
Source: Author's calculation based on Google scholar data

According to the number of citations, 26 publications or 5.47% of the total number of publications have 30 or more citations and they include more than 50% (50.73%) of the total number of records and 49 publications or 10.32% are in the range from 10 to 29 citations and they include 28.48% of the total number of listed citations, which means that the first 75 publications by citations accumulate a total of about 80% of the citations (79.21%); 183 publications or 38.53% range from 1 to 9 citations and they include 20.79% of the total number of listed citations; the remaining 217 publications have not recorded a single citation (Table 1; Figure2).
Moreover, an analysis of the frequency of appearance of the first 40 most frequently appearing phrases in the titles was made with the help of https://www.webtools.services/text-analyzer.
In addition to the first 5 words that were included in the search (project, management, intelligence, artificial, AI), the titles of the publications also include the following words: review, role, application, construction, agile, impact, software, future, driven, based, study, risk. The complete list of the frequency of occurrence of the first 25 most frequent words in the publication's titles is given in the Table 2.

Table 2: List of the frequency of occurrence of the 25 most frequent words in the analyzed publication's titles

No.	Word	Freq.	No.	Word	Freq.
1	Project	509	14	Driven	26
2	Management	493	15	Based	26
3	Intelligence	298	16	Study	25
4	Artificial	296	17	Risk	25
5	AI	208	18	Enhancing	24
6	Review	36	19	Analysis	22
7	Role	36	20	Data	21
8	Application	34	21	Efficiency	20
9	Construction	32	22	Literature	18
10	Agile	31	23	Decision	18
11	Impact	31	24	Challenges	18
12	Software	30	25	Generative	18
13	Future	28			

Source: Author's calculation

Finally, the Table 3 provides a summary of some relevant publications where the areas in which AI can have an influence on PM activities are systematized.

Table 3: Summary of some relevant publications where AI can have an impact on PM activities (by authors, alphabetical order)

Authors	Title of the publication	Application of AI in PM
(Celestin & Vanitha, 2017)	The Surprising Role of AI in Revolutionizing Project Management	improved resource allocation; improved risk management; improved communication and collaboration; improvement in time management; reduction in unforeseen risks; boost in team collaboration
(Duică et al., 2024)	The Use of Artificial Intelligence in Project Management.	facilitate the processes of planning and organizing work; monitoring employees; make informed decisions; anticipate future situations; increases the efficiency of managers by delegating routine tasks to machines
(Fridgeirsson et al., 2021)	An Authoritative Study on the Near Future Effect of Artificial Intelligence on Project Management Knowledge Areas	project cost estimation; project risks estimation; schedule success; estimating project duration; creating WBS; planning procurement management; monitoring and controlling project work

(Fridgeirsson et al., 2023)	A Qualitative Study on Artificial Intelligence and Its Impact on the Project Schedule, Cost and Risk Management Knowledge Areas as Presented in PMBOK	automating tasks; optimizing resource allocation providing data-driven insights; enhance decision making; enhance risk analyses; enhance project forecasting; increasing efficiency; reducing costs; improving project outcomes; predict future project outcomes; resource allocation; risk management
(Hashfi & Raharjo, 2023)	Exploring the Challenges and Impacts of Artificial Intelligence Implementation in Project Management: A Systematic Literature Review	decision-making; problem-solving; data analysis; risk assessment; performance monitoring; optimization; improve project planning; improve resource allocation; improve cost estimation; improve risk mitigation; improve overall project outcomes; enhance efficiency, accuracy, and insights in project management processes; improved project success rates and delivery
(Hossain et al., 2024)	The Impact of Artificial Intelligence on Project Management Efficiency	improve overall project efficiency decision-making, and resource optimization; decrease in project costs; early identification of risks; enhanced resource allocation efficiency; enhanced communication efficiency; facilitating superior utilization of resources; fostering heightened productivity; improved risk management capabilities; facilitating the early detection and alleviation of potential project risks
(Ibrahim et al., 2024)	Enhancing Project Management Efficiency through Artificial Intelligence: A Comprehensive Review	enhance decision-making; optimize resource use; streamline project execution
(Karamthulla et al., 2024)	Navigating the Future: AI-Driven Project Management in the Digital Era	enabling organizations to make informed decisions; mitigate risks effectively; forecast project timelines; forecast resource requirements; streamline project communication; automate repetitive tasks; improve project efficiency and productivity
(Ong & Uddin, 2020)	Data science and artificial intelligence in project management: The past, present and future	reduce risks; daily tracking of projects; identify anomalies; identify outliers or correlations within projects; integration and automation; chatbot assistance; autonomous management of projects
(Prifti, 2022)	Optimizing Project Management using Artificial Intelligence	increasing project manager support; increasing accuracy, strategy and insight; increased the productivity of project managers; increased the emotional intelligence of project managers;

		increased creativity of project managers
(Sahadevan, 2023)	Project Management in the Era of Artificial Intelligence	proactive use of data for early risk detection; faster analysis and resolution of defects; handling scope creep and raise in expectations; predicting and experimenting (reduce risks, enhance results, and boosting total project delivery accuracy and efficiency); team empowerment to replace central management
(Shamim, 2024)	Artificial Intelligence in Project Management: Enhancing Efficiency and Decision-Making	automating tasks; optimizing resource allocation; enhancing decision-making; project planning and scheduling; risk management; stakeholder communication; improve efficiency, effectiveness, and outcomes
(Shoushtari et al., 2024)	Application of Artificial Intelligence in Project Management	improved resource allocation; enhanced risk prediction and mitigation; increased scheduling accuracy; more accurate cost estimation; enhanced project communication
(Taboada et al., 2023)	Artificial Intelligence Enabled Project Management: A Systematic Literature Review	understand, classify, and analyze stakeholders; improve team performance through AI-assisted communication; planning, duration prediction, effort estimation, scheduling, assignment of human resources to project tasks, resource leveling, and project cost estimation; effective procurement management; appropriate communication with stakeholders, continuous learning, and the management of physical resources; the automation of requirements meetings and project quality management; efficient project delivery; measure project performance indexes; assess delays and implement appropriate responses, and monitor activities, gives rise to precise project measurement; risk identification, probability distribution modelling, risk assessment, stability prediction, dispute risk forecasting, and project riskiness classification

Source: Overview provided by authors

4. CONCLUSIONS

This article has used Google Scholar as a Web Search engine to identify the relevant scholarly literature related to artificial intelligence and project management and also to systematize the areas in which firms can benefit from implementing artificial intelligence in project management. The results show that the number of literatures is almost indiscernible until 2017 (maximum of 5 publications per year), but the upsurge is evident especially in the last few years. When it comes to the number of citations, 5.47% of the total number of publications have included more than 50% of the total number of records, while the first 75 publications by citations accumulate a total of about 80% of the citations. Finally, the summary of relevant titles of publications shows that artificial intelligence has an impact on project management activities, mainly in the following areas: reducing risks, daily tracking of projects, identifying anomalies, project cost estimation, project risks estimation, estimating project duration, enabling organizations to make informed decisions, mitigating risks effectively, forecasting project timelines, forecasting resource requirements, facilitating the processes of planning and organizing work, monitoring employees, making informed decisions, anticipating future situations, increasing the efficiency of managers by delegating routine tasks to machines, improving

resource allocation, enhancing risk prediction and mitigation, understanding, classifying, and analyzing stakeholders, improving team performance through AI-assisted communication, problem-solving, data analysis and many others.

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