# Familiarity and level of implementation of AI technology in the project management domain

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## Abstract

Artificial intelligence (AI) is transforming various industries, including the field of project management. AI-based tools can optimize processes, support decision-making and automate routine, repetitive tasks, leading to increased efficiency and effectiveness. However, organizations vary in their awareness and implementation of AI in the domain of project management, which depends on factors such as industry, company size and level of digital maturity. This study aims to assess the level of familiarity and extent of AI technology implementation in IT project management organizations. The analysis covers key areas of AI use, perceived benefits, challenges and risks of implementing this technology. The results of the survey will contribute to a better understanding of the current situation and provide guidance on best practice for future AI implementation in the project management domain.

**Keywords:** Artificial Intelligence, AI, Project Management, AI Implementation, Automation, Decision-making

## 1. Introduction

The term artificial intelligence (AI) first appeared in the Garner report in 2017 [1] and hasn't been off the "Top 10 Strategic Technology Trends" list for every year since. As far back as 2016 (the report is from the year before), Gartner analysts claimed that AI and machine learning (ML) includes technologies such as deep learning, neural networks and natural language processing. The aforementioned technologies may also include more advanced systems that understand, learn, predict, adapt and potentially act autonomously. Systems can learn and change future behaviors, leading to more intelligent devices and programs. Analysts were also adamant that the combination of extensive parallel processing power, advanced algorithms and huge data sets to power the algorithms has ushered in a new era. Gartner's analysts were right.

Over the ensuing years, Gartner reports have featured aspects such as Intelligent Apps [1], Intelligent Things [1], AI Foundation [2], Intelligent Apps and Analytics [2], AI-Driven Development [3], AI Security [4], AI Engineering [5, 6], Generative AI [6], AI Trust, Risk and Security Management (AI TRISM) [7], Adaptive AI [7]. Trends for 2025 [8] indicate that Agentic AI will be key, i.e. autonomous AI can plan and take action to achieve goals set by the user, as well as AI governance platforms, i.e. technology solutions enable organizations to manage the legal, ethical and operational performance of their AI systems. This indicates how, along with trends, the technology has actually developed, touching on important aspects such as security or the aspect of risks. This has all led to a point where the AI agent is becoming a virtual workforce to assist, offload and support the work of humans or traditional applications. And in addition, technology is enabling organizations to manage the legal, ethical and operational performance of their AI systems [8].

Observations indicate that artificial intelligence can support innovation, but also carries risks related to job losses and difficulties in defining responsibility [9]. However, the development of AI technology over the past years, but also the discussion about risks, security or ethical aspects, has led to its application in almost all industries, including IT project management domain.

Project management, but also project organization is a special area of my scientific and practical interest. I noticed that in this domain, where an effective project management process (including budget, resource, risk, or stakeholder management), task automation, and efficient tools are particularly important, it would be appropriate to consider which areas of the broadly understood project management could be (or in principle already are) supported by AI in the first place. Therefore, I asked the following research questions:

1. What is the familiarity of AI technology in an organization specializing in project management?

2. What is the level of implementation of AI technology in this domain?

In connection with the above, the author addresses the topic of identifying and assessing the level of familiarity with AI technology, its implementation together with the identification of key areas of AI use, perceived benefits, challenges as well as risks, which is the purpose of this study. And the results of the study will contribute to a better understanding of the current situation, level of awareness and knowledge, and ultimately provide guidance for future implementation of AI in the field of project management.

## 2.    Research background

In recent years, there has been a rapid development of applications of artificial intelligence in project management, in response to the increasing complexity of projects and the need to increase the efficiency and quality of decisions. A review of the literature indicates that the first mentions of AI applications in the project management domain emerged after 2020, especially in the context of the growing popularity of tools such as ChatGPT, or generative AI and the growing opportunities due to this.

In 2021, Niederman, in his article "Project management: openings for disruption from AI and advanced analytics" [10], analyses the potential changes in project management resulting from the integration of artificial intelligence and advanced data analytics. The author pointed out that neither AI nor advanced analytics are likely to attract the attention of Project Managers other than those who produce AI- or analytics-based artefacts or use these tools to create their products and services. However, with the packaged support of project management software, new tools and approaches can be expected to more effectively support current operations, improve or eliminate activities that can be automated, extend current capabilities with the availability of more data, computing power and mathematical algorithms, and suggest ways to change how projects are delivered and whether they are needed [10].

How artificial intelligence will transform project management in the age of digitisation, based on a systematic literature review, was prepared by Nenni et al. In their article "How artificial intelligence will transform project management in the age of digitization: a systematic literature review" [11]. The authors pointed out that artificial intelligence is increasingly used in project risk management, especially in the construction and IT sectors, offering support in data analysis, risk prediction and decision advice. Despite the growing interest, research indicates that there is a lack of consistent AI implementation patterns and practices, confirming the early stage of development of the field. There is an urgent need to develop dedicated tools and methods tailored to the industry, taking into account ethical, technological and organizational challenges [11].

Zadeh et al. in their study "Integrating AI for Agile Project Management: Innovations, Challenges, and Benefits" [12] focused on integrating AI into agile methodologies, highlighting its role in task automation, predictive analytics and resource optimization. They also identified challenges related to data privacy, the need to upskill Project Managers and the potential over-reliance on technology. The findings of this study highlight the importance of a strategic approach to implementing artificial intelligence to ensure that technological innovation is aligned with organizational goals and fosters a culture of continuous improvement.

An analysis of the impact of AI on efficiency and decision-making in project management was carried out by Shamim in the article "Artificial Intelligence in Project Management: Enhancing Efficiency and Decision-Making" [13]. The author highlighted

that as organizations increasingly rely on project management methodologies to perform tasks, deliver outputs and achieve objectives, the role of AI in improving these processes is becoming crucial.

There are quite a few studies that point out the benefits of automating planning, scheduling, resource allocation and risk management. In addition, research papers regularly address the ethical issues and social implications of adopting AI in project management [13, 14, 15, 16, 17]. Through the analysis of real-world applications and theoretical perspectives, this research contributes to the understanding of how AI can be effectively used to improve project management practices and drive organizational success across industries.

The publication "Application of Artificial Intelligence in Project Management" by Shoushtari et al. is definitely worth citing, as the authors have provided a measurable overview of the wide range of applications of AI in different areas of project management, such as [16]: resource allocation, risk prediction, scheduling, cost estimation and communication. Authors highlighted the effectiveness of AI in improving project performance, as shown in fig. 1:
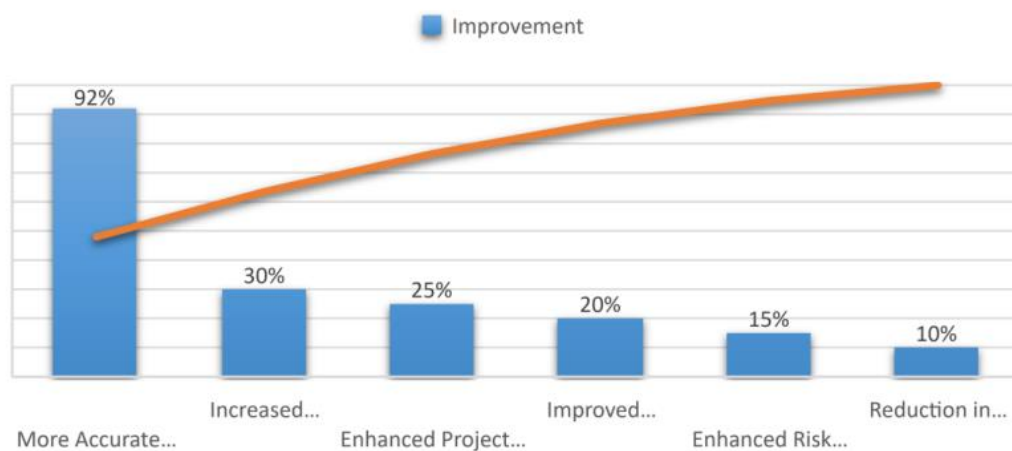


**Fig. 1.** Results of application of AI in project management

The article under discussion concludes by outlining the future directions of artificial intelligence in projects and its potential impact on the field [18]:

- more personalized project management: artificial intelligence can personalize project management approaches based on individual project characteristics and team dynamics;
- real-time project monitoring: Artificial intelligence can facilitate real-time monitoring of project progress and provide continuous feedback for course correction;
- predictive project management: Artificial intelligence can predict not only potential risks but also project outcomes, enabling proactive planning and strategic decision-making.

According to the authors, the future of project management is undoubtedly linked to the development of artificial intelligence. By embracing this emerging technology and addressing its limitations, organizations can unlock significant benefits and achieve new levels of project success.

A different perspective was presented by Duică and co-authors, who, in their article "The Use of Artificial Intelligence in Project Management", pointed out that the emergence of new technologies, especially artificial intelligence, is disrupting the functioning of organizations at many levels (processes, organization, strategy, communication, finance, etc.) [19]. These changes particularly affect the management function, which lies at the heart of the organization. AI is changing many aspects of managers' work, such as planning, organizing and monitoring work, as well as human resource management, including the recruitment, training and development of employees.

In summary, the literature points to a growing interest in the integration of AI in project

management, highlighting its potential in automating processes, improving efficiency and supporting decision-making. At the same time, it draws attention to the challenges of implementing AI, such as ethical issues, the need for appropriate competencies and the need to adapt tools to industry specifics. Also relevant is the question of the role of the manager of the future in the age of AI.

## 3.   Methods

The research was conducted using the exploratory study methodology which enables an understanding of a research problem that is still poorly understood. It is a preliminary study, often used to generate hypotheses or understand the context. As noted by Lange [20], an exploratory study is an open and flexible study geared towards data discovery and hypothesis formulation, without predetermined structures or statistical tests.

The exploratory study included in this research is an international survey, with a research sample of N=93, which took place in Q4 2024 in Poland, Germany and India. This selection of countries was intended to cover a wide range of economies (from developed, to frontier economies, to clearly developing economies), which also provided an international context for the study. The survey included people involved in the field of project management providing service mainly to the information technology (IT) sector, also: insurance, financial and engineering industries. In terms of position held, respondents included: Project Manager Officers (36%), Project Managers (33%), Program Managers (4%), Portfolio Managers (3%), as well as the remaining members of the project team. Both women and men participated in the study, with a slightly higher proportion of men. The majority of respondents were between 25 and 44 years old, reflecting the typical age of active professionals in the field of project management and technology.

Responders surveyed answered 12 questions, half of which were closed questions and half open questions [21]. The questions concerned the level of familiarity and implementation of AI technologies in the field of project management, as well as readiness to implement these technologies in the future.

The following research methods and analytical tools, as well as statistic techniques were used to analyze the collected survey data: descriptive statistics, correlation analysis and thematic analysis.

Descriptive statistics is the discipline dealing with methods of collecting, compiling, presenting and analyzing numerical data relating to the study of a community, persons, things or events. Statistical inference, on the other hand, involves the generalization of the results of a study of a part of a community called a random sample to the whole community (population) from which that part is drawn, with a simultaneous estimation of the magnitude of the error made in this generalization [22]. Thus, descriptive statistics is the collection, organization, analysis and presentation of data in such a way that it is easy to understand them and draw general conclusions about them. In this study, descriptive statistics was used to summarize data on AI familiarity, level of implementation and demographic distribution of respondents.

Correlation analysis, which examines the strength and direction of a relationship between two (or more) numerical variables. Correlation, as a statistic, states the existence of relationships between variables, but cannot explain why they occur or how they came about [23]. In this study, it allows us to identify the relationship between AI implementation and organizational factors, such as the type of industry or the availability of AI training.

Thematic analysis is a method of developing, analyzing and interpreting patterns in a qualitative data set. It involves systematic processes of coding data to develop themes that are the ultimate analytical goal. Thematic analysis offers a set of tools – concepts  techniques, practices and guidelines – for organizing, analyzing and interpreting a dataset. Using them well requires thinking about and making choices about other aspects of the research design and process [24]. In the study indicated, thematic analysis was used to analyze open-ended responses about the challenges, risks and application areas of AI.

In addition, an analysis of Polish and English-language literature in the narrow field of the application of AI in the project management domain was carried out, together with an in-depth analysis of technology trend reports provided by Gartner. This involved reviewing key

academic articles, industry reports, and case studies, which highlighted both the challenges and opportunities of integrating AI into project management practices. The literature review revealed the growing adoption of AI tools in project planning, scheduling, and risk management, as well as their potential to enhance decision-making processes and improve project outcomes. Furthermore, Gartner's trend reports provided valuable insights into the latest developments in AI technologies, such as machine learning algorithms, natural language processing, and predictive analytics, which are increasingly being leveraged to automate routine tasks, predict project performance, and optimize resource allocation. Through this comprehensive review, we identified the current state of AI integration in project management, key trends shaping its future, and areas that still require further research and development.

## 4. Areas of data analysis

The analysis carried out was divided into several main areas. First one, the level of familiarity with AI technology was the identification of the most commonly used artificial intelligence solutions (like: ChatGPT, Canva, DeepL, Google Gemini, Character AI, Remove.bg, JanitorAI, QuillBot, Grammarly, Claude, DALL-E, Jasper AI), which shows fig. 2, together with the respondent's subjective assessment of the level of familiarity with this technology (60% respondents consider themselves beginners, only 5% advanced and 1% expert).
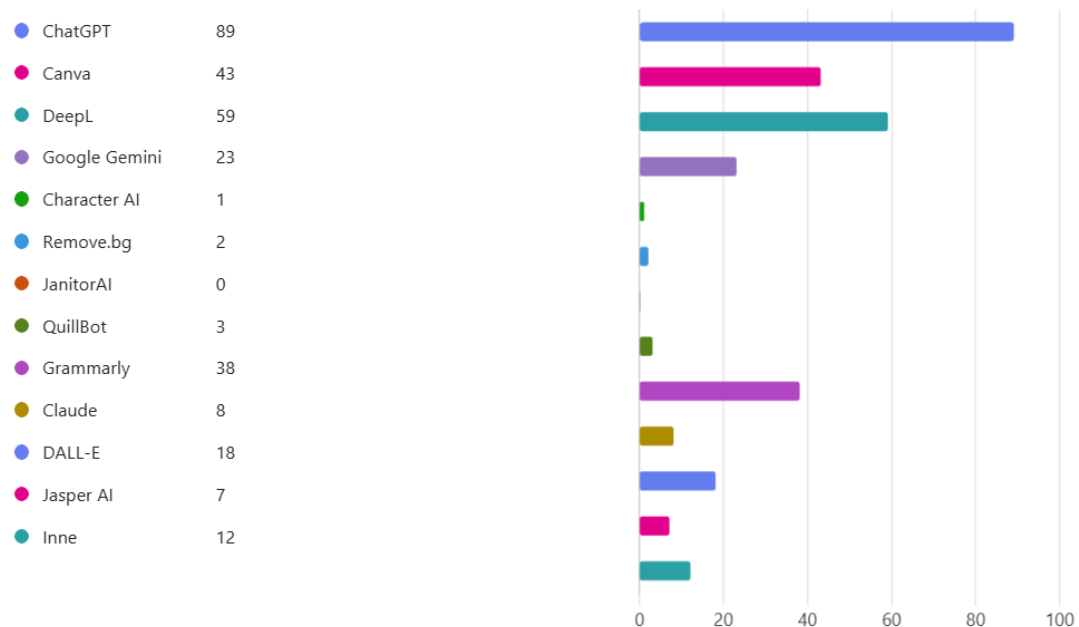


**Fig. 2.** Known AI tools

The aim of this analysis was to understand the degree of knowledge, both theoretical and practical, of the research group surveyed. The extent of AI technology adoption in the project management domain and its usefulness assessment, including the issue of strategy, trainings and R&D (Research and Development) team, is an area that identifies the level of familiarity and the extent of AI technology implementation in IT project management organizations.

As many as 68% of respondents admitted that AI was an implementation in the organization (in any area) and 33% that it was in the project management (meaning that artificial intelligence could have been widely and systemically deployed in various project management activities, but also where the Project Manager occasionally used any artificial intelligence tool to support PM/O activities). It is also worth noting that 34% simply do not know, are not aware of such activities being undertaken by the company, which is indicated by fig. 3.

**Fig. 3.** Use of AI technology in the PM/O domain in the last 12 months

The area of strategy, training and R&D was an attempt to understand how open and ready the organization is to innovation and experimentation (39% companies have an R&D team, while as many as 37% have no such knowledge at all), how much it has the idea and budget to implement this innovative technology. Here, it should be pointed out that only 31% admitted that the company invests in AI training.

It is also crucial to have a well–thought–out strategy to implement AI in the PM/O area. Fig. 4 shows that only 32% of respondents admitted to this, when the majority, 43%, have no such knowledge.



**Fig. 4.** Having a strategy for implementing artificial intelligence in the PM/O domain

Another important aspect of the study (fig. 5) was the identification of the key areas of AI application where the implementation of the technology brings the most benefits, together with the identification of quick wins like: reporting, repetitive tasks, notes and minutes from meeting, task automation. This approach serves to understand the effectiveness and usefulness of artificial intelligence both at a general level and in the context of key areas, responsibilities, processes in project management, which are: resource planning, communication, risk/issue management, team building, budgeting, scheduling, stakeholder management, reporting, notes and minutes, presentation preparation, training and development, change management, onboarding process, supplier management:
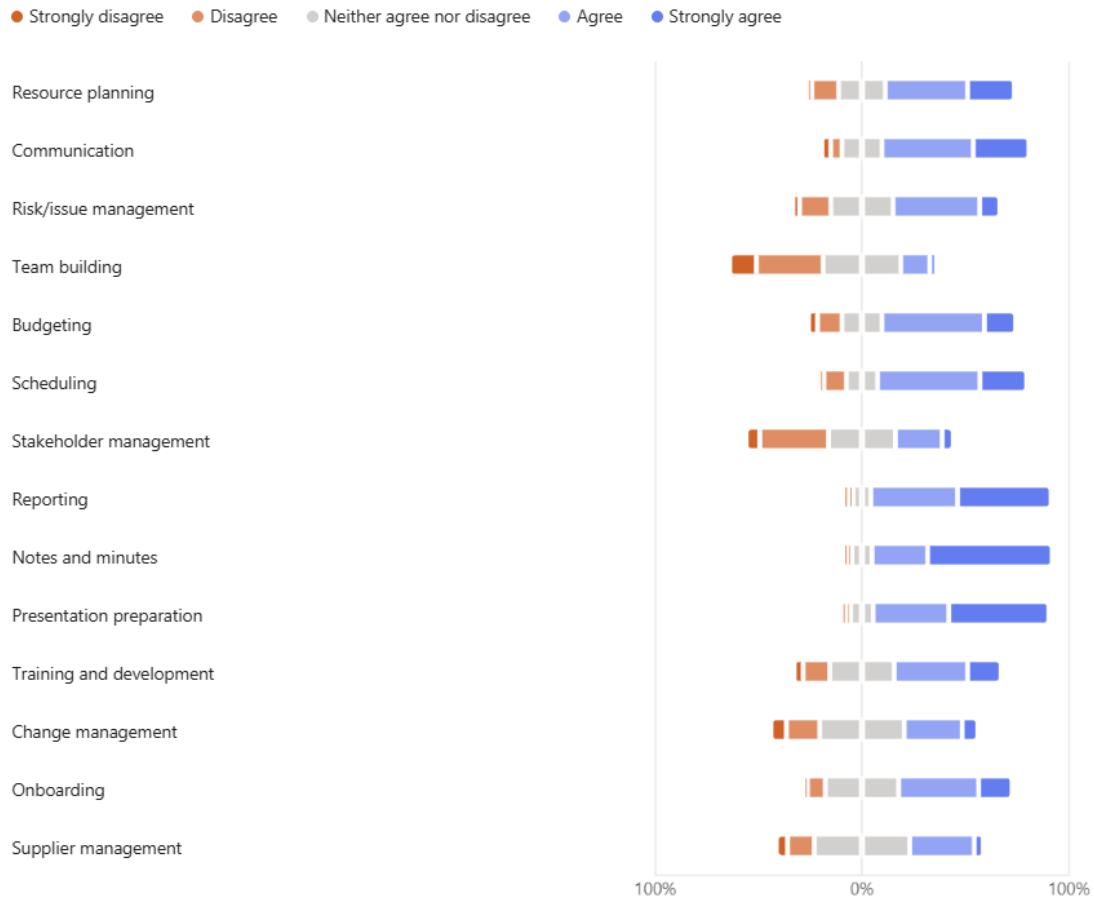
**Fig. 5.** Key areas where AI is or will be useful in the PM/O domain

In this respect, it is important to identify those with which respondents strongly agree: reporting, notes and minutes and preparation of presentations. It is also worth pointing out three further key areas from the point of view of Project Managers in particular: communication, resource planning and scheduling. Additional areas have been identified: monitoring and forecasting, real-time task, task prioritization. On the other hand, the topics that respondents currently feel AI cannot exploit are team building and stakeholder management.

Challenges and risks, i.e. the analysis of barriers and concerns related to AI implementation, are an indispensable part of project management. In the same way, in the context of AI implementation, challenges, risks, but also concerns should be identified in terms of the implementation of the new technology. What is illustrated in fig. 6. The most commonly identified risks are: data privacy concerns, AI hallucinations (inaccurate, misleading, or nonsense output provided by AI-powered systems is referred to as AI hallucination [25]), loss of quality of work. This last element was particularly indicated in the framework in the additional opinions on concerns.
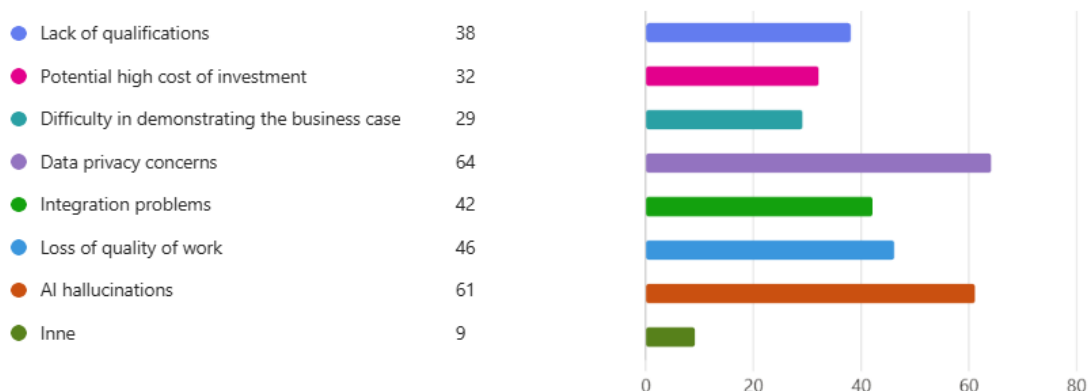
**Fig. 6.** Challenges of implementing artificial intelligence in the PM/O domain

The last factor of data analysis was future trends (fig. 7), including the identification of areas of complete replacement of the human factor by AI technology and the time perspective of implementation in the organization (only 16% have already implemented AI in PM/O, 20% expect implementation within a year, as many as 45% within 1–3 years, 6% do not believe in implementing AI in PM/O at all), according to the best knowledge of the respondent.
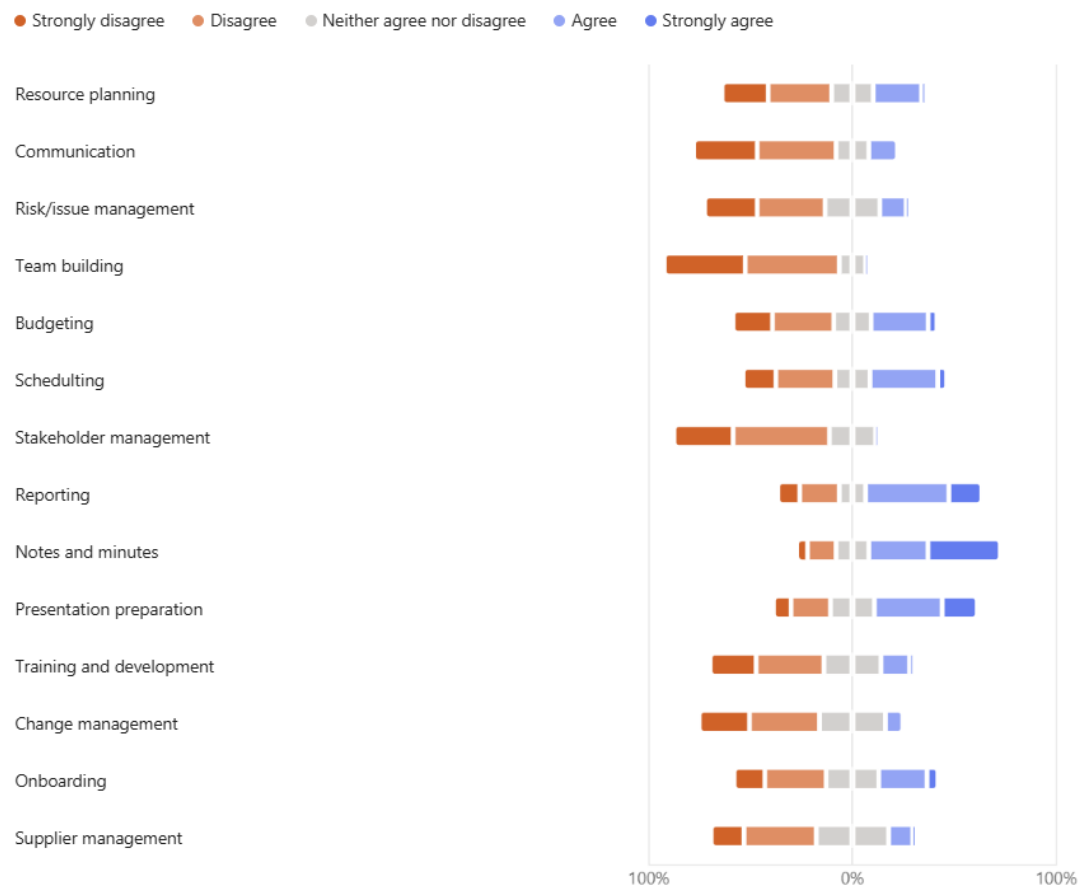


**Fig. 7.** Areas where AI can completely replace the PM/O

Similarly, the area of manual and repetitive tasks was indicated, while it is significant that most people strongly disagree with the statement that AI can completely replace the Program and Project Manager, as well as Project Officer in terms of team building, stakeholder management and communication.

This holistic approach to the study, including an attempt to understand the current level of AI knowledge and readiness for innovation, as well as identifying improvements already implemented, will allow a multidimensional exploration of the field of project management in terms of the use of AI technologies and identify best practices and predictions for the future.

## 5.   Key conclusions – discussion

### 5.1.   Current maturity level of AI implementation in the PM/O domain

Based on the data obtained, it can be indicated that organizations are at different stages of AI adoption: from no implementation, through the experimental phase, to full integration of AI tools into project management processes. The participants in the survey represented organizations that have not yet started any AI activities, as well as those that are at the stage of

pilot experiments or R&D team activities, up to units with integrated AI solutions in PM/O processes. The most frequently mentioned applications of AI relate to the automation of reporting (including notes and minutes) and data analysis (for e.g. resource planning and scheduling), which may suggest a pragmatic and cautious approach – starting implementations with easily measurable and low–risk areas. While excluding some of the responsibilities of the Program, Project Manager and Project Manager Officers, which are manual and repetitive.

## 5.2. Key factors supporting and hindering AI implementation

The correlation analysis identified key factors influencing the level of AI adoption in project organizations. The most significant determinants favoring implementation include:
- the existence of dedicated research and development (R&D) teams, present in 39% of the organizations surveyed;
- having an AI implementation strategy (30%);
- actively investing in the development of employees' AI competencies (31%);
- integration of AI solutions with the tools used, such as PPM tool, Outlook or SharePoint;
- positive management attitude and support from project sponsors.

On the other hand, significant barriers inhibiting AI adoption were identified, including:
- low levels of technology awareness – as many as 34% of respondents have no knowledge of AI implementations in their organization;
- low level of specialized technical competence among employees;
- high costs associated with the implementation of new solutions;
- concerns about regulatory compliance and data security;
- lack of a culture of innovation and organizational readiness to experiment with future technologies.

## 5.3. Strategic recommendations for organizations planning to implement AI in the area of project management

With the above analyses in mind, the following will identify strategic recommendations for organizations that plan to implement AI in the PM/O area:
- it is imperative to invest in employee training to increase AI competence. Increased knowledge and awareness will reduce unnecessary concerns and mitigate the risks involved. Only access to a broad knowledge of AI, understanding the technology, its advantages and disadvantages, will avoid misunderstandings and use AI in the most effective way;
- AI should be tested on a limited basis before full implementation, e.g. through pilot projects carried out by R&D. Learning by doing (without fear) seems to be implementation in a controlled environment;
- identify specific areas of project management where AI can bring the most value, e.g. risk analysis, cost forecasting, schedule management. Identify quick wins first, then consciously select areas where the benefit and cost ratio appears to be greatest;
- ensure regulatory compliance and data security through appropriate data management policies and collaboration with cyber security experts. This will allow you to operate in an environment that is under control, both from a security and compliance perspective;
- foster a culture of innovation and openness to new technologies within the organization, as well as a culture of learning from mistakes that can happen in any working environment. Key in this area will be the selection of a sponsor for the initiative and extensive marketing of any success in this area.

## 6. Conclusions And Potential Future Research Directions

The study highlights the dynamically evolving role of artificial intelligence in the project management domain, especially in IT-oriented organizations. The results confirm that despite the relatively low level of AI maturity in the PM/O domain, there is a clear trend towards increased awareness, experimentation and early implementation efforts. Organizations tend to adopt AI solutions in selected low–risk areas, such as reporting, meeting notes and presentation support, which can serve as entry points for wider adoption of AI in project processes.

One of the key findings of the study is that there is significant variation in the level of AI implementation across organizations, influenced by internal factors such as digital maturity, the existence of R&D teams, availability of training and strategic vision. The correlation analysis further showed that organizations that invest in the development of AI competencies and have structured implementation strategies show greater readiness and openness to further integrate AI technologies. In particular, the IT sector stands out as the most advanced in the use of AI within PM/O, while industries such as finance or engineering remain more cautious, mainly due to regulatory constraints and perceived implementation risks.

Future research should aim to explore long-term developments in the implementation of AI in the PM/O domain, with a particular focus on:

- measuring the long-term impact of AI on project performance indicators such as time, cost, quality and stakeholder satisfaction;
- analysis of the integration of artificial intelligence in agile project management, where AI has already shown significant potential in increasing agility, productivity and overall project success [10, 11, 12, 13, 14, 15, 16, 17, 18];
- identifying best practices for integrating AI with existing project management tools and methodologies, including agile, hybrid and cascading models;
- exploring the socio-organizational implications of the use of artificial intelligence, particularly in terms of changing roles including manager, team dynamics, decision–making autonomy and resistance to technological change;
- assessing the ethical and legal aspects of the implementation of artificial intelligence, particularly in relation to data privacy;
- developing maturity models for artificial intelligence in project management, which would allow organizations to benchmark their progress in implementing artificial intelligence and chart structured development paths.

Given the rapid pace of development of agent-based artificial intelligence and AI management platforms predicted by Gartner [8], future research efforts should also explore how such technologies are transforming PM/O management structures and decision support systems. This direction is particularly relevant in the context of the increasing autonomy of AI systems and their potential to support, augment or even replace selected managerial functions.

Ultimately, this study contributes to understanding of the current challenges and opportunities of artificial intelligence in the project management domain and provides a basis for further empirical and conceptual exploration of this interdisciplinary and increasingly influential field.

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