Use of Artificial Intelligence in IT Project Management

Anastasia Bajiashvili

PhD (Engineering Sciences), Professor, Georgian American University, Tbilisi, Georgia.

Email: *nata.bajiashvili@gau.edu.ge*

Nino Lolashvili

PhD (Engineering Sciences), Professor, Georgian American University, Tbilisi, Georgia.

Email: *nino.lolashvili@gau.edu.ge.*

DOI: https://doi.org/10.68218/2ph0a933

Abstract

With the rapid development of technologies, project management is becoming increasingly complex, and new management approaches and organizational cultures are emerging. Companies seek to adopt as many innovations as possible in order to gain a competitive advantage in the market. The constantly changing environment presents continuous challenges for IT project managers, who must find new and innovative ways to manage and execute their activities more effectively. This article examines the benefits of using artificial intelligence (AI) in project management and explores how AI can support IT project managers in their daily activities and help prevent project-related issues.

Keywords: IT, AI, Artificial Intelligence, Project Management, Information Systems, ChatGPT

Introduction

The rapid advancement of digital technologies has fundamentally transformed the way organizations operate, compete, and deliver value [1]. In this dynamic environment, information technology (IT) projects have become increasingly complex, involving distributed teams, tight deadlines, evolving requirements, and heightened expectations for quality and efficiency. Traditional project management approaches, while still valuable, often struggle to cope with the pace of change and the growing volume of data that modern projects generate. As a result,

organizations are seeking innovative tools and methods to enhance decision-making, optimize resource utilization, and improve project outcomes [1].

Artificial intelligence (AI) has emerged as one of the most promising technologies capable of reshaping project management practices. By leveraging machine learning, natural language processing, and data-driven analytics, AI-powered systems can automate routine administrative tasks, support risk assessment and forecasting, and provide actionable insights to project managers [2],[6]. This shift allows project leaders to focus more on strategic activities, stakeholder engagement, and team development, while delegating time-consuming and repetitive tasks to intelligent systems.

In the context of IT project management, the potential of AI is particularly significant. IT projects are characterized by rapid technological change, uncertainty in requirements, and a high degree of interdependence between technical and organizational factors. The integration of AI-based tools, such as intelligent assistants and analytics platforms, offers new opportunities to enhance planning accuracy, monitor project performance in real time, and support timely and informed decision-making [2, 6].

This thesis explores the role of artificial intelligence in IT project management, examining how AI technologies can support project managers in their daily activities, improve efficiency, and reduce risks throughout the project lifecycle. By analyzing current applications of AI and illustrating their practical use through real-world examples, the study aims to demonstrate how AI can contribute to more effective, adaptive, and resilient project management practices in contemporary organizations.

Project and Project Management

A project is a temporary endeavor undertaken to create a unique product, service, or result. An IT project is an effort aimed at developing a new information system or infrastructure

and/or upgrading and improving existing ones. Project management is the process that helps organize and manage work effectively. It involves the application of approaches, methods, and practices designed to address specific problems and their solutions in order to achieve successful outcomes [1].

Every IT project has a project manager—a professional who organizes, plans, and implements activities within project constraints (budget, resources, and time). Project managers lead the team, define project objectives, communicate with stakeholders, and are able to anticipate the final project outcomes upon project closure [4].

Artificial Intelligence

Artificial intelligence (AI) is a broad and rapidly developing field within computer science. Researchers aim to develop AI using various computational systems (Nilsson). In simple terms, AI is a system or machine capable of imitating human behavior in order to perform assigned tasks and use accumulated information for self-improvement [2, 6].

The development of AI is important for several reasons:

- It can reduce human errors;
- It replaces routine tasks;
- It is available at any time;
- It works faster than humans;
- It plays a significant role in social media;
- It supports learning and education [2, 6].

There are different ways to build AI systems depending on intended goals and expected outcomes. AI systems are commonly categorized into three main types: narrow, general, and superntelligence [5, 6].

Artificial Narrow Intelligence (ANI) is designed to perform specific tasks within a limited domain. Such systems can execute thousands of calculations per second but are restricted to predefined variables set by designers and developers [2, 6].

Artificial General Intelligence (AGI) is considered human-level intelligence. The idea is that AGI would be capable of performing any intellectual task that a human can do, including planning, reasoning, and learning from experience. Unlike ANI, AGI is not limited to a single domain and can generalize across tasks [5].

Artificial Super Intelligence (ASI) is a hypothetical form of intelligence in which machines surpass human intelligence in virtually all areas, from scientific creativity to social skills. Although purely theoretical at present, ASI is often discussed in the context of future AI research and ethics [3, 5].

Studies have shown that project managers spend more than half of their time on administrative tasks such as managing checks and updates. Artificial intelligence systems can easily handle these relatively simple but time-consuming tasks. As a result, project managers can devote more time to the most important aspects of their work. In other words, they can focus more on complex processes that go beyond routine management activities. They can also focus more on team members, contribute to staff development, and help identify and develop further skills. Few factors slow down a project as much as a project manager who simply does not have enough time to address the needs and requirements of each team member. Freeing up part of the working time during the day is not only an effective way to ensure smoother project progress, but it also helps create a more supportive work environment in which employees feel supported and know that they will always have access to appropriate resources [2, 6].

Another important potential benefit is **risk assessment**. It is a fact that every project is prone to risks. AI can accurately identify defects or assess product quality. An AI-based system is capable of comparing current progress with the planned schedule and, based on data, can perform the following actions:

- Alert the team about potential delays;
- Indicate that the team is deviating from KPI (key performance indicator) targets;
- Provide recommendations on how the team can maintain alignment with the original project plan.

The use of such models enables teams to quickly identify potential problems and take timely corrective actions.

AI in Project Management (ChatGPT Case)

A good example of demonstrating the capabilities of artificial intelligence is **ChatGPT**. It is an AI-powered chatbot developed by OpenAI that operates in a conversational mode with users: it receives input, processes it, and returns responses in a human-readable format. It has been trained on a wide range of internet-sourced texts, enabling it to generate easily understandable responses to a broad spectrum of requests.

When considered in the context of project management, ChatGPT also has a wide range of applications. For example, ChatGPT can be integrated into project management tools to provide conversational interfaces for project managers and team members, allowing them to quickly obtain information, updates, and notifications. In addition, ChatGPT can be used to automate repetitive tasks, such as sending status updates, thereby freeing project managers' time to focus on more strategically important activities.

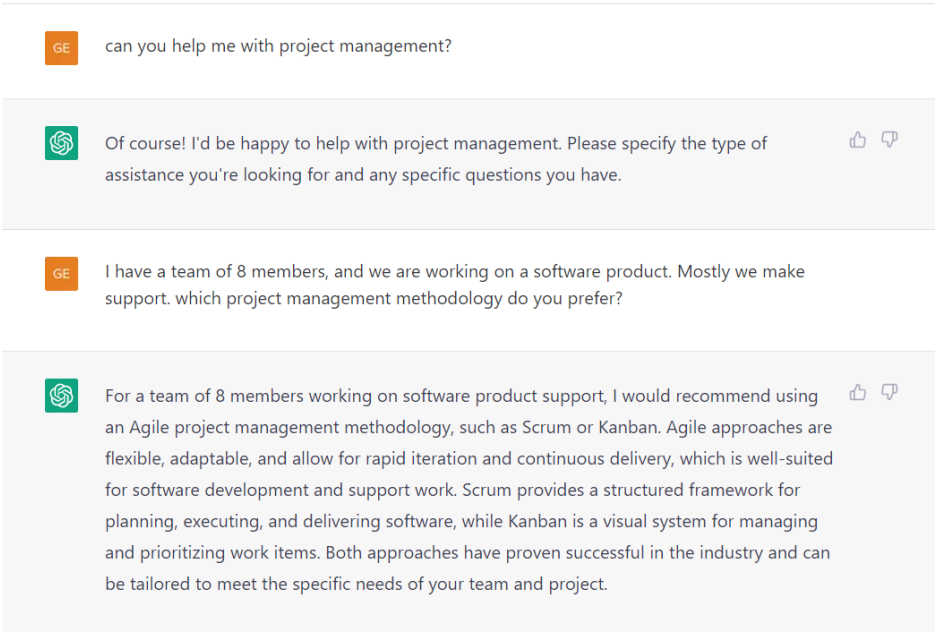
Furthermore, ChatGPT can be used to generate reports such as project progress summaries, resource utilization reports, and risk overviews, helping project managers make more informed decisions. The model's ability to understand and produce natural language makes it an ideal tool for natural language processing and text-based analysis [7].

Demonstrative short dialogue:

— *"Can you help me with project management?"*

— *"Of course! I would be happy to help you with project management. Please specify what type of assistance you are looking for and ask any specific questions you may have."*
— *"I have a team of 8 members and we are working on a software product. Most of our work is related to support. Which project management methodology would you recommend?"*
— *"For a team of 8 members working on software product support, I would recommend an Agile methodology, such as Scrum or Kanban. The Agile approach is flexible, adaptive, iterative, and focused on continuous delivery, which is well suited for software development and ongoing support. Scrum provides a structured framework for planning, execution, and delivery of software, while Kanban is a visual system for managing and prioritizing work items. Both approaches are widely used in the industry and can be tailored to the specific needs of your team and project."*

Figure 1 – Dialogue with ChatGPT on a simple case



The response provided by ChatGPT fully aligns with the appropriate solution. It correctly selected the project management methodology and provided well-reasoned arguments explaining the working style of each approach [1, 4]. While this question may have been relatively simple for the model, it is worth examining how it performs when asked to provide advice on a specific case supported by concrete figures. The response is presented below:

— *"I have a team of 15 members working on a software product. The deadline is approaching, and only 20% of the work has been completed. What can we do?"*

— *"If you have a team of 15 members working on a software product, the deadline is approaching, and only 20% of the work has been completed, it is important to take immediate action to bring the project back on track. Below are several steps you should consider:*

1. **Assess the situation:** Identify the causes of low progress and evaluate your team's resources and capabilities.

2. **Prioritize tasks:** Determine which tasks are most critical before the deadline and prioritize them accordingly.

3. **Re-plan the schedule:** Based on the prioritized tasks, revise the schedule to ensure that the most important tasks are completed on time.

4. **Assign clear roles and responsibilities:** Ensure that each team member clearly understands their roles and responsibilities.

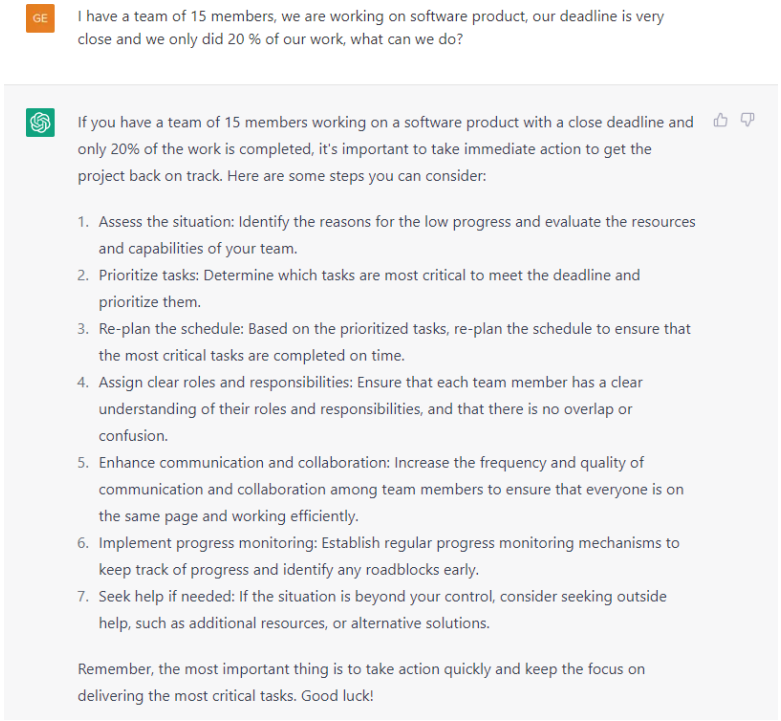
5. **Strengthen communication and collaboration:** Increase the frequency of communication and collaboration among team members to ensure alignment and effective teamwork.

6. **Monitor progress:** Establish regular progress monitoring mechanisms to track progress and identify blockers in a timely manner.

7. **Seek support if necessary:** If the situation is beyond your control, consider seeking external support, such as additional resources or alternative solutions.

Remember, the most important thing is to act quickly and maintain focus on completing the most critical tasks. Best of luck!"

Figure 2 – Dialogue with ChatGPT on a specific case



As evident from ChatGPT's response, the model fully understood the problem at hand and provided recommendations in the correct sequence [7].

Conclusion

In conclusion, some of the most complex aspects of IT project management involve managing the project budget, schedule, risks, and quality [1, 4]. These areas are closely interrelated and are often affected by uncertainty and changing requirements. The use of artificial intelligence in project management can improve management processes by supporting data-driven decisions, enabling early risk detection, and automating routine tasks [3, 6]. This allows project managers to focus more on strategic coordination and team leadership, increasing efficiency and helping ensure that projects are completed on time and within budget.

REFERENCES

1. Seymour, T. and S. Hussein, "The History of Project Management," 2014.
2. Oracle, "What Is Artificial Intelligence (AI)?," Oracle. [Online]. Available: https://www.oracle.com/cis/artificial-intelligence/what-is-ai/. [Accessed: May 29, 2023].
3. G. Gurkaynak, I. Yilmaz, and G. Haksever, "Stifling artificial intelligence: Human perils."
4. R. Siles, "The Roles of the Project Manager," 2018. [Online]. Available: https://www.pm4dev.com/pm4dev-blog/entry/the-role-of-the-project-manager.html. [Accessed: May 29, 2023].
5. B. Goertzel, *Aspects of Artificial General Intelligence*.
6. IBM, "What Is Artificial Intelligence?," IBM Cloud. [Online]. Available: https://www.ibm.com/cloud/learn/what-is-artificial-intelligence/.
7. OpenAI, "ChatGPT," 2023. [Online]. Available: https://chat.openai.com/.