# The Study Of Artificial Intelligence's Impact On Project Management And Employee Performance

## Xu Bo[1]*, Oyyappan [2]

**Abstract**

This thesis study examined the use of artificial intelligence (AI) in project management with an emphasis on the effects on employees. Artificial intelligence (AI) has the potential to enhance decision-making, boost productivity, and streamline project management in the future. This thesis's primary goal was to look at how artificial intelligence has affected project managers and the workers they hire. In this study, the researchers look at the advantages and disadvantages of using artificial intelligence (AI), how it changed the responsibilities of project managers and team members, and what ethical issues arose from using AI in project management. The study comprised a literature review in addition to semi-structured interviews with project managers from Greece and Sweden. This was carried out to provide a complete picture. The results show that working people may benefit greatly from the integration of artificial intelligence into project management in several ways, such as decreased effort, improved accuracy, and enhanced insights. On the other hand, ethical issues and employee training need to be thoroughly investigated before artificial intelligence was used.

**Keywords:** AI implementation, Project management, Working personnel, Ethical considerations, Power shift, Training and support.

**Introduction**

The integration of artificial intelligence (AI) into project management has garnered significant attention in recent times (Wang et al., 2022). Although artificial intelligence (AI) software has been used for project management since 1987, its application has only just gained traction. Thanks to advancements in machine learning and data analytics, artificial intelligence (AI) has the potential to completely transform project management in several areas, including planning, scheduling, risk management, and decision-making. How AI influenced those working in project management, however, was still up for debate. By giving project management teams more information to assist them make better decisions, artificial intelligence (AI) has the potential to significantly increase their productivity and efficacy. Project personnel may find it much easier to make wise judgements if AI algorithms can sort through mounds of data in quest of patterns and insights (Zhang et al., 2021). Results from projects, efficiency, and the distribution of resources might all increase as a consequence. On the other hand, others were concerned that AI may someday replace human work in certain professions. If the automated capabilities of AI change a worker's employment, they may need to acquire new skills or upgrade their current ones. Liu and colleagues (2023) underscore the need to understand the potential effects of artificial intelligence on workforce structure, career paths, and job security in project management.

**Background of the Study**

The term "artificial intelligence" (AI) describes the first steps towards giving robots human-level cognitive abilities. The idea of artificial intelligence has been becoming closer to reality in recent decades, but it was more common in science fiction in the 1800s and 1900s. Artificial intelligence (AI) has emerged as an obvious contender to replace humans in many current occupations, maybe in a broader domain than the researcher can now imagine. This shift from human to AI job performance improved efficiency, but it also presents us with a new, larger-scale work-life condition to adjust to (Soomro et al., 2019). There has never been a more rapid rate of change, and this shift may represent one of the most significant technological revolutions to which humanity has had to adjust. Consequently, to minimise the number of consequences, it was vital to have a clear understanding of which changes were required and how to implement them.

Arguably, various forms of leadership have existed since the dawn of humanity. As a result of these shifts and adaptations, effective leadership styles have evolved alongside our civilisations. The impact of AI on management was substantial, and it was already apparent that AI would impact all organisations going forward. Artificial intelligence (AI) in the workplace necessitates new approaches to leadership and management decision-making. Artificial intelligence (AI) has the potential to greatly improve the efficacy of numerous occupations, including management if used appropriately. With the advent of AI in the workforce, this thesis seeks to understand how managers of the future need to adjust to these technological shifts, with a particular emphasis on the shift in leadership responsibilities that inevitably accompany these innovations (Brown et al., 2021).

## Purpose of the Study

This research aims to look at how intelligent technology has changed project management and how well employees are doing their jobs. This research aimed to assess the impact of artificial intelligence technologies on project management, monitoring, and planning; it also sought to determine how these technologies affect worker productivity, job satisfaction, and overall efficiency. The study's main goal was to clarify these effects to persuade businesses to use AI more extensively to boost worker productivity and performance.

## Literature Review

There were several methods to define AI. Artificial intelligence (AI) was defined as "the theory and advancement of computer systems able to perform tasks that typically call for human intelligence" according to the English Oxford Living Dictionaries, and "the capability of a machine to imitate smart human behaviour" according to Merriam-Webster, both of which have been considered by the writers of this thesis. According to these explanations, artificial intelligence was the process of teaching computers to mimic human intelligence and behaviour, allowing them to carry out hitherto human-only jobs and even adapt to and interact with their physical surroundings. Keep in mind that as technology evolves, the definition of AI evolves as well. The researcher stops referring to anything as "AI" when it becomes commonplace and easy to use. The reason is that most people think of AI as a technology for the far future. Artificial intelligence aims to improve learning, thinking, and perceiving. With these features, AI can reason and behave in a way that maximises the likelihood of success. With its many desirable traits, AI has great promise as a tool for addressing complex problems. When AI can mimic human thought and behaviour, it was able to tackle issues that humans cannot. Eliminating human mistakes and operating at extraordinary speeds were two potential benefits of using AI to solve issues instead of people (Frankenfield, 2020).

## Research Questions

i.  What shift can we anticipate regarding the most vital skills to succeed as a leader as AI is implemented in the workplace?

## Research Methodology

China's many different organisations were responsible for carrying out the research. The researcher chose a quantitative technique because of the restricted resources and the short amount of time available. Using a random sampling process, every respondent was contacted for the survey. Following this, a sample size of 875 was determined using Rao Soft. Individuals confined to wheelchairs or who were unable to read and write would have the survey questions read aloud by a researcher, who would then record their answers word for word on the survey form. While participants waited to complete their surveys, the researcher would inform them about the project and field any questions they may have. On occasion, it was asked that people finish and send back questionnaires simultaneously.

**Sampling:** Research participants filled out questionnaires to provide information for the research. Using the Rao-soft programme, researchers determined that there were 875 people in the research population, so researchers sent out 962 questionnaires. The researchers got 945 back, and they excluded 27 due to incompleteness, so the researchers ended up with a sample size of 918.

**Data and measurement:** A questionnaire survey was used as the main source of information for the study (one-to-correspondence or Google-form survey). Two distinct sections of the questionnaire were administered: Both online and offline channels' (A) demographic information, and (B) replies to the factors on a 5-point Likert scale. Secondary data was gathered from a variety of sites, the majority of which were found online.

**Statistical Software:** SPSS 25 was used for statistical analysis.

**Statistical tools:** To get a feel for the data's foundational structure, a descriptive analysis was performed. A descriptive analysis was conducted to comprehend the fundamental characteristics of the data. Validity was tested through factor analysis and ANOVA.

**Conceptual Framework**
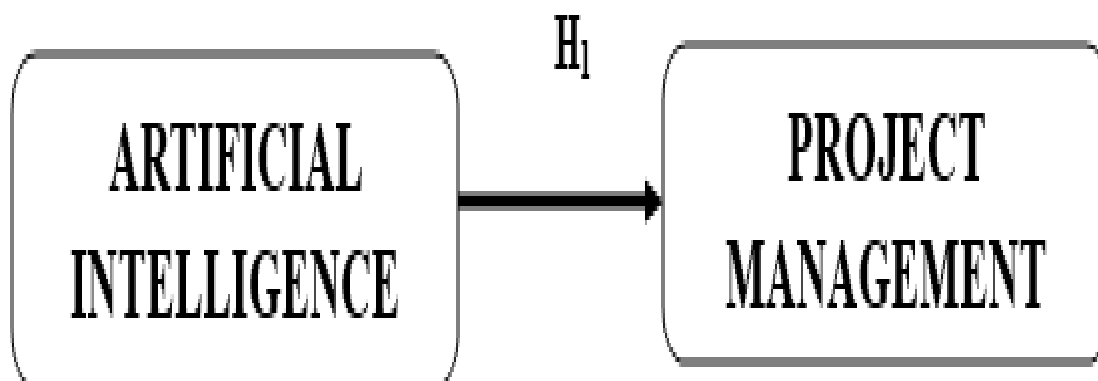


**Result**
**Factor Analysis**
The process of verifying the underlying component structure of a set of measurement items was a widely used application of Factor Analysis (FA). The observed variables' scores were believed to be influenced by hidden factors that were not directly visible. The accuracy analysis (FA) technique was a model-based approach. The primary emphasis of this study was on the construction of causal pathways that connect observable occurrences, latent causes, and measurement inaccuracies. The appropriateness of the data for factor analysis may be assessed by using the Kaiser-Meyer-Olkin (KMO) Method. The adequacy of the sampling for each model variable as well as the overall model was assessed. The statistics quantify the extent of possible common variation across many variables. Typically, data with lower percentages tends to be more suited for factor analysis.

KMO returns integers between zero and one. Sampling was deemed adequate if the KMO value falls within the range of 0.8 to 1.

It is necessary to take remedial action if the KMO is less than 0.6, which indicates that the sampling is inadequate. Use their best discretion; some authors use 0.5 as this, therefore the range is 0.5 to 0.6.

• If the KMO is close to 0, it means that the partial correlations were large compared to the overall correlations. Component analysis is severely hindered by large correlations, to restate.

Kaiser's cutoffs for acceptability are as follows:

A dismal 0.050 to 0.059.

• 0.60 - 0.69 below-average

Typical range for a middle grade: 0.70–0.79.

Having a quality point value between 0.80 and 0.89.

The range from 0.90 to 1.00 is stunning.

**Table 1: KMO and Bartlett's**

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .987 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 3252.968 |
| | df | 190 |
| | Sig. | .000 |

The overall significance of the correlation matrices was further confirmed by using Bartlett's Test of Sphericity. A value of 0.987 was the Kaiser-Meyer-Olkin sampling adequacy. By using Bartlett's sphericity test, researchers found a p-value of 0.00. A significant test result from Bartlett's sphericity test demonstrated that the correlation matrix was not a correlation matrix.

**Test for Hypothesis**
**Dependent Variable**
**Project Management:**
Project management encompasses all aspects of organising, launching, and controlling a project to meet predetermined goals within specified parameters. It includes some important tasks and duties that must be fulfilled for projects to be successful. Initiation was the first stage of project management and was characterised by the definition of the project's purpose, scope, and goals (Kehoe, 2020). Project stakeholders' requirements must be identified, objectives must be defined, and a project charter must be created to describe the project's purpose, scope, and deliverables. The next step, once the project was started, was the planning phase. Here, project managers lay down the groundwork for the project by outlining activities, making timetables, estimating resources, and establishing budgets. The project plan was a guide for carrying out, overseeing, and controlling the project. Planning for risk management to foresee problems and provide solutions was also a part of it. Coordination of resources, management of teams, and performance of activities specified in the project plan comprise the execution phase. Here was where the meat of the undertaking was done. At this stage, it was critical to have good leadership, communication, and coordination in place to finish projects on time and deal with problems as they arise (Holzmann, 2022).

**Independent Variable**
**Artificial Intelligence's Impact:**
The widespread influence of artificial intelligence (AI) was undeniable; it has revolutionised decision-making, process management, and the execution of tasks in many industries. Particularly affected by this where the corporate world, the healthcare system, and commonplace technology. By automating both simple and complicated commercial procedures, AI greatly improves efficiency and production. Data input, chatbot customer care, and even more complex tasks like supply chain optimisation were all within the capabilities of AI-powered systems (Wang, 2021). By eliminating human error and increasing efficiency, this automation frees up workers to concentrate on higher-level, more creative endeavours. Artificial intelligence systems can sift through mountains of data in search of patterns and insights that people would miss, paving the way for better long-term planning and decision-making. Artificial intelligence has changed the game when it comes to healthcare, improving both diagnosis and therapy. With the use of machine learning algorithms, radiologists can more consistently and early diagnose diseases like tumours or fractures in medical pictures. Treatment regimens may be customised using AI technologies and patient data, leading to better results and more efficiency. Furthermore, drug research was making greater use of AI-driven technologies, which were lowering costs and enhancing the pace of novel therapy development. Additionally, AI has revolutionised everyday technologies. By using natural language processing, voice assistants such as Google Assistant, Alexa, and Siri can comprehend and answer user enquiries, facilitating easier and more natural interactions with technology. Platforms like Netflix and Amazon utilise recommendation systems that rely heavily on AI to provide content or items that were personalised to each user's likes based on their preferences and previous actions (Musa, 2020).

**A Relationship between Project Management and Artificial Intelligence's Impact.**
AI technologies were further incorporated into project management processes, and the link between project management and the effect of AI was growing. By boosting decision-making, automating chores, and delivering sophisticated insights, AI increases project management. Routine activities in project management, including scheduling and resource allocation, may be automated with the help of AI. This effectiveness frees project managers to concentrate on the big picture by reducing the amount of paperwork they have to do. To make things run more smoothly, AI can do things like automatically update project deadlines and reallocate resources based on real-time data. The data-driven insights and predictive analytics made possible by AI also greatly enhance decision-making. Artificial intelligence systems can foresee problems and provide solutions by looking at past project data. With this feature, project managers may foresee potential problems and take preventative measures before they become major setbacks. Artificial intelligence (AI) is useful in risk management because sophisticated algorithms can analyse project data for trends and possible dangers. The project manager's capacity to handle and manage risks efficiently was enhanced by predictive models, which can foresee hazards and provide mitigation solutions. By comparing project needs with available resources, AI helps with resource optimisation. Productivity was increased and resources were better aligned with project goals when AI solutions made sure the correct people were working on the appropriate things and that resources were being used effectively (Kakuta, 2021).

Based on the above discussion, the researcher formulated the following hypothesis, which was to analyse the relationship between Project Management and Artificial Intelligence's Impact.

**"H$_{01}$: There is no significant relationship between Project Management and Artificial Intelligence's Impact."**
**"H$_1$: There is a significant relationship between Project Management and Artificial Intelligence's Impact."**

**Table 2: H$_1$ ANOVA Test**

| ANOVA | | | | | |
|---|---|---|---|---|---|
| **Sum** | | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 39488.620 | 533 | 5655.517 | 965.479 | .000 |
| Within Groups | 592.770 | 384 | 5.356 | | |
| Total | 40081.390 | 917 | | | |

In this study, the result is significant. The value of F is 965.479, which reaches significance with a p-value of .000 (which is less than the .05 alpha level). This means the **"H$_1$: There is a significant relationship between Project Management and Artificial Intelligence's Impact"** is accepted and the null hypothesis is rejected.

**Discussion**
The study indicates that AI has the power to change many project management domains, including manufacturing, delivery, and production. The fact that AI was already having an impact on a wide range of industries—from banking to manufacturing was evidence of both its widespread acceptance and revolutionary potential. The significance of project planning, risk management, and resource allocation were emphasised by the respondents in addition to the previously mentioned roles and responsibilities of a project manager for the successful completion of a project. The concept that the researcher should give improved project management techniques priority going ahead was also addressed in the literature. Many techniques for integrating AI into project management were listed, including but not limited to automating routine tasks, analysing customer data, and identifying risks and opportunities, concerning the amount of knowledge about AI among project managers (Hayek and Hajj, 2022).

Artificial intelligence (AI) had great potential for project management, but like with previous technological revolutions, there were still certain obstacles to overcome. AI can completely transform project management, according to research. Before project managers were fully equipped to handle an AI-integrated, AI-automated, and AI-predictive future, a few challenges must be overcome. Project managers expressed concerns over job loss, reliability, and personal data security during interviews for this thesis; these topics were covered in Geraldi et al.

**Conclusion**
Both the effectiveness of the project as well as its results might be greatly improved by the use of neural networks in project management. However, it was crucial to take into account how artificial intelligence affected the employment market and to deal with any potential ethical issues. This thesis study has shown how artificial intelligence affects workers since it was of the utmost necessity to address ethical concerns. It was clear from a literature analysis and semi-structured interviews with project managers in Sweden and Greece that using AI requires project managers to acquire new skill sets and undergo training. The interviews revealed that different project managers had different perspectives on AI. Concerns over the impact on job security and the need for training new employees were shared by many. It was significant to observe that these second thoughts emphasise the need for efficient transition management and personnel assistance throughout the change. Furthermore, it became quite clear that ethical issues had to be taken into consideration when using AI to manage projects. From an ethical perspective, the most important factors were privacy, justice, accountability, openness,

and human supervision. Organisations must promote the moral and responsible use of AI, with a focus on preserving people's right to privacy and advancing equity in the process of making decisions.

## References

1. Brown et al., Burke, R. (2019). Project management leadership: Building creative teams (4th ed.). Wiley.
2. Frankenfield, Fernandes, G., Peixoto, F., Rodrigues, M., & Lopes, N. (2020). Use of Artificial Intelligence to support project management. Procedia Computer Science, 176, 2302-2311.
3. Holzmann, V., Zitter, D., & Peshkess, S. (2022). The Expectations of Project Managers from Artificial Intelligence: A Delphi Study. Project Management Journal, 53(5), 438– 455. Accessed on 16 May 2023.
4. Kehoe, D. F., Pitafi, A. H., & Choudhury, S. (2020). AI and machine learning in project management: Trends, challenges, and opportunities. In Proceedings of the 2020 IEEE Technology & Engineering Management Conference (TEMSCON) (pp. 1-7). IEEE.
5. Li, X., Cao, X., Wang, Y., Zhang, J., & Guo, X. (2021). An overview of artificial intelligence in project management: Challenges and opportunities. Journal of Intelligent Manufacturing, 32(1), 13-28.
6. Musa, S., Sharma, R. R. K., & Pant, R. (2020). Artificial intelligence in project management: A bibliometric analysis. Computers & Industrial Engineering, 150, 106923.
7. Njuguna, E., & Kakuta, O. (2021). The impact of artificial intelligence in project management: A critical analysis. Journal of Computer Science and Artificial Intelligence, 4(1), 12-18.
8. Soomro, Z. A., Shah, M. H., Ahmed, J., & Akbar, M. W. (2019). Artificial intelligence techniques in project management: A systematic literature review. IEEE Access, 7, 107326- 107345.