



Degree Project in Entrepreneurship and Innovation Management

Second Cycle, 15 credits

# **Implementation of Artificial Intelligence in Project Management and effect in working personnel**

Literature Review and Case Studies in Athens, Greece and Stockholm, Sweden

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# **Implementation of Artificial Intelligence in Project Management and effect in working personnel**

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Master of Science Thesis TRITA-ITM-EX 2023:210  
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**Master of Science Thesis TRITA-ITM-EX 2023:210**



**KTH Industrial Engineering  
and Management**

**Implementation of Artificial Intelligence in Project  
Management and effect in working personnel**

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## Abstract

This thesis project examines the implementation of Artificial Intelligence (AI) in Project Management, focusing on its impact on the working personnel. AI has the potential to improve project management processes, increase efficiency, and enhance decision-making. This thesis aims to explore the implementation of AI in project management with a focus on the impact on working personnel. The study analyzes the benefits and challenges of AI implementation, the impact on the role of project managers and team members, and the ethical considerations of using AI in project management. The research incorporates a literature review and semi-structured interviews conducted with project managers from Greece and Sweden to gather comprehensive insights. The findings suggest that the integration of AI in project management can significantly benefit working personnel by reducing workload, increasing accuracy, and providing better insights. However, the implementation of AI requires careful consideration of ethical issues and proper training of personnel.

## Key-words

AI implementation, Project management, Working personnel, Ethical considerations, Power Shift, Training and Support.



**KTH Industriell teknik  
och management**

## Examensarbete TRITA-ITM-EX 2023:210

### Implementering av artificiell intelligens i projektledning och effekt i arbetande personal

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Godkänt 2023-06-14	Examinator Kristina Nyström	Handledare Terrence Brown
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#### Sammanfattning

Detta examensarbete undersöker implementeringen av artificiell intelligens (AI) i projektledning, med fokus på dess inverkan på arbetstagare. Studien innehåller en litteraturgenomgång och semistrukturerade intervjuer med projektledare från Grekland och Sverige för att samla in omfattande insikter. AI har potential att förbättra projektledningsprocesser, öka effektiviteten och förbättra beslutsfattandet. Studien analyserar fördelarna och utmaningarna med AI-implementering, inverkan på rollen för projektledare och teammedlemmar, och de etiska övervägandena av att använda AI i projektledning. Resultaten tyder på att integrationen av AI i projektledning avsevärt kan gynna arbetande personal genom att minska arbetsbelastningen, öka noggrannheten och ge bättre insikter. Men implementeringen av AI kräver noggrant övervägande av etiska frågor och korrekt utbildning av personal.

#### Nyckelord

AI-implementering, Projektledning, Arbetspersonal, Etiska överväganden, Maktskifte  
Utbildning och support.



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## List of abbreviations

AI: Artificial Intelligence
HCI: Human-Computer Interaction
KPIs: Key Performance Indicators
ML: Machine Learning
NDA: Non-Disclosure Agreement
NPS: Net Promoter Score
OCT: Organizational Change Theory
PM: Project Management
PMO: Project Management Office
SCT: Social Cognitive Theory
SDGs: Sustainable Development Goals
TAM: Technology Acceptance Model
TRA: Theory of Reasoned Action
TTF: Task-Technology Fit



## 1. Introduction

The implementation of Artificial Intelligence (AI) in Project Management (PM) has become a popular area of research in recent years (Kehoe et al., 2020). Even though the application of AI software to project management dates back as far as 1987, it is only now that it is really taking off. With the advances in machine learning and data analytics, AI has the potential to transform the way projects are managed, from planning and scheduling to risk management and decision-making (Huang et al., 2021; Wang et al., 2022). However, the impact of AI on the working personnel in project management remains a topic of debate.

On the one hand, AI can augment the capabilities of project managers and team members, enabling them to make more informed decisions and optimize project performance (Bao et al., 2020). AI algorithms can analyze substantial volumes of data, identify patterns, and generate valuable insights, providing project personnel with valuable decision support (Zhang et al., 2021; Shtub et al., 2022). This can lead to improved project outcomes, increased efficiency, and better resource allocation (Bannerman et al., 2020; Yu et al., 2021).

On the other hand, there are concerns about the displacement of human workers and the potential for AI to replace certain job roles altogether (Kang et al., 2019; Bryde et al., 2020). The automation capabilities of AI may lead to changes in the roles and responsibilities of project personnel, requiring them to adapt their skill sets and acquire new competencies (Laplante et al., 2021; Shen et al., 2022). There is a need to understand the potential impact of AI adoption on job security, career paths, and the overall workforce structure in project management (Cao et al., 2022; Liu et al., 2023).

This thesis will attempt to examine the implementation of AI in project management with a focus on the effect that this will have on the working personnel and the power shift that will be created. Specifically, the paper will explore the benefits and challenges of AI adoption in project management, the potential impact on the roles and responsibilities of project personnel, and the implications for workforce development and training. The research will be guided by a review of the literature on AI in project management (Zeng et al., 2020; Chen et al., 2021) and case studies of AI implementation in real-world project settings (Li et al., 2022; Liu et al., 2023), along with interviews that will allow individuals to express their perspectives and opinions on this matter. The findings of this study can, potentially, contribute to the ongoing



discourse on AI in project management and inform the development of strategies for managing the workforce implications of AI adoption in the field.

## 1.1 Problem Statement and Research Motivation

This research aims to explore the potential benefits and drawbacks of integrating AI into project management, as well as examining the practical implementation of AI in project management along with the power shift it will create in traditional roles. By delving into these topics, this thesis seeks to contribute to the ongoing discussion surrounding the intersection of AI and project management, and to provide insights into how AI can be used to improve project management practices.

The integration of Artificial Intelligence (AI) in project management has gained significant attention in recent years (Holzmann et al., 2022). AI technologies offer promising opportunities to enhance project performance, optimize resource allocation, and improve decision-making processes. (Soomro et al., 2019; Musa et al., 2020; Zuppo, 2018). However, as organizations increasingly adopt AI-based project management tools, it is crucial to investigate the impact of these advancements on the working personnel involved in project execution. Understanding the effects of AI implementation on individuals' roles, responsibilities, and job satisfaction is imperative for ensuring successful and sustainable integration.

Although several studies have explored the benefits of AI in project management (Smith et al., 2022; Brown et al., 2021; Lee et al., 2023), there remains a significant research gap regarding the implications for the working personnel. While AI holds tremendous potential for automating repetitive tasks and augmenting human capabilities, its introduction may also lead to concerns regarding job displacement, skill requirements, and changes in work dynamics. It is essential to address these issues and develop strategies that support the workforce during this transition, ensuring that AI implementation is a positive and empowering experience for the project management professionals.

Recent research has also emphasized the importance of examining the impact of AI on project team collaboration and communication (Chen et al., 2022). As AI-based tools and algorithms become integral to project management processes, understanding how these technologies influence teamwork, information sharing, and coordination among project team members is crucial (Kehoe et al., 2020; Moorthy & Ghani, 2020). Exploring the evolving dynamics of





collaboration in the context of AI implementation will provide valuable insights into the necessary adjustments and training programs that can optimize team performance and synergy.

This thesis aims to fill the research gap by investigating the effect of AI implementation in project management on the working personnel, considering mainly individual perspectives. By exploring existent studies and literature and conducting interviews with project management practitioners, this study will examine the perceived impact of AI adoption on job roles, skill requirements, job satisfaction, team collaboration, and communication patterns (Alqahtani et al., 2020; Brzeziński & Głowacz, 2021; Njuguna & Kakuta, 2021). The findings can potentially provide insights for organizations looking to implement AI in their project management processes while considering the well-being, professional growth, and collaborative effectiveness of their workforce.

Through this analysis, it is hoped to provide insights into how organizations can effectively leverage AI to improve project management practices and achieve better project outcomes, and simultaneously examine the effect this could have on the working personnel.

## 1.2 Research Questions

- How does the implementation of artificial intelligence (AI) in Project Management (PM) lead to a power shift and transform traditional roles and dynamics within project teams?



## 1.3 Delimitations

In a thesis project, potential delimitations are restrictions or boundaries that may affect the scope, generalizability, and validity of the research. Delimitations are factors that are beyond the control of the researcher or that cannot be accounted for in the study design (Johnson & Christensen, 2019). This thesis focuses on examining the implementation of artificial intelligence in project management and its effect on working personnel, specifically exploring the power shift that arises as a result. The following delimitations outline the scope and boundaries of this research:

- **Context:** The study primarily focuses on the implementation of AI in project management across various industries and sectors. It aims to provide a general understanding of the power shift dynamics rather than examining a specific industry or organization. The findings are expected to be applicable to a wide range of project management contexts.
- **Working Personnel:** The research primarily considers the perspectives and experiences of working personnel involved in projects, including project managers and team members. It seeks to analyze how the implementation of AI influences their roles, decision-making authority, and collaboration within project teams.
- **AI Technologies:** The study examines a range of AI technologies employed in project management, such as machine learning algorithms, predictive analytics, natural language processing, and intelligent project management tools. The research acknowledges that the impact and power shift dynamics may vary depending on the specific AI technologies used.
- **Implementation challenges:** The research could concentrate on specific challenges or barriers faced during the implementation of AI in project management, such as data privacy concerns, resistance to change, or ethical considerations.
- **Temporal Considerations:** The research considers the present and potential future implications of AI implementation in project management. It does not focus on historical aspects or the evolution of AI technology in project management over time.

It is essential to acknowledge these delimitations to ensure that the research stays focused and achievable within a reasonable scope. By defining the boundaries, the study aims to provide



valuable insights into the power shift caused by the implementation of AI in project management and its impact on working personnel.

## 1.4 Sustainability

This report can contribute and focus to several of the United Nations Sustainable Development Goals (SDGs) as they can be seen in Fig. 1.

Firstly, the research findings can support the goal of decent work and economic growth (SDG 8) by identifying the potential impact of AI adoption on job roles and workforce development in the project management sector. By providing insights into the skills and training required for successful AI integration, the research can inform strategies for creating new job opportunities and promoting the reskilling and upskilling of workers.

Secondly, the research can contribute to the goal of quality education (SDG 4) by informing the development of training programs and educational curricula that prepare project personnel for working in an AI-enabled environment. By identifying the knowledge and competencies required for successful AI integration, the research can inform the design of training programs that equip workers with the skills needed to thrive in the evolving project management landscape.

Finally, the research can support the goal of industry, innovation, and infrastructure (SDG 9) by promoting the adoption of AI in project management as a means of optimizing project performance and enhancing competitiveness. By identifying the benefits and challenges of AI adoption, the research can inform about the development of policies and initiatives that facilitate the integration of AI into project management practices, thereby promoting innovation and improving infrastructure.

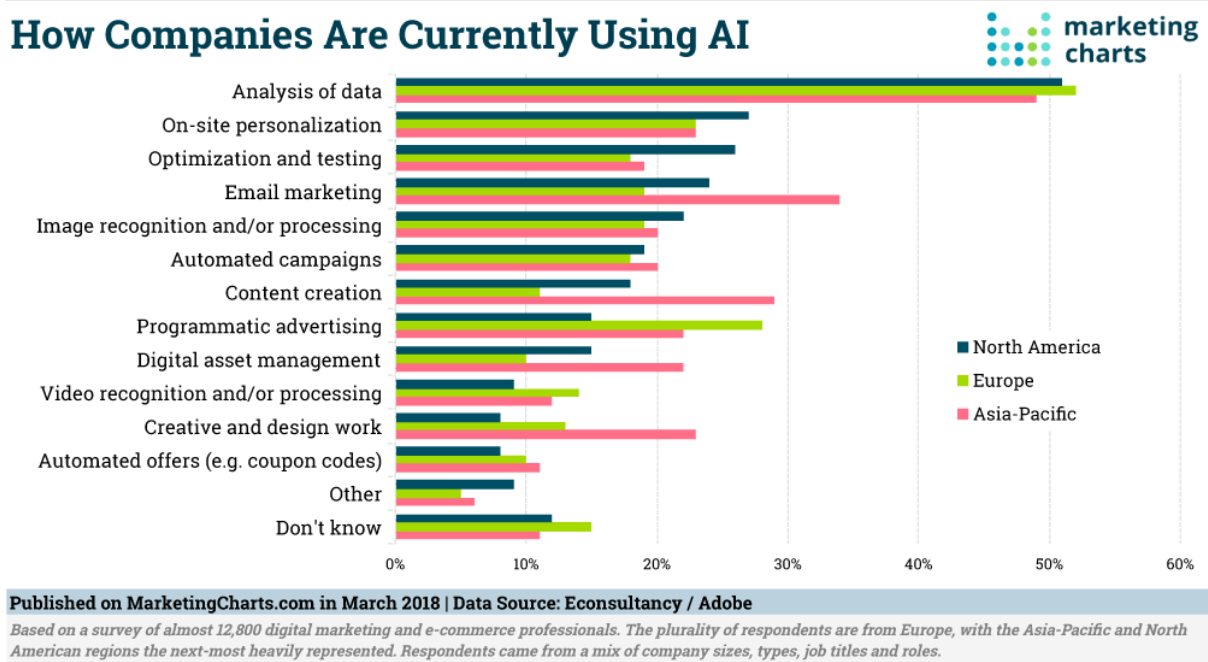
In summary, the thesis on the implementation of AI in project management with a focus on the effect on working personnel has the potential to contribute to several SDGs, including SDG 4, SDG 8, and SDG 9, by providing insights into the impact of AI on the workforce and informing strategies for promoting the integration of AI into project management practices.



**Figure 1: The 17 Sustainable Development Goals (SDGs) based on United Nations.** (United Nations, 2015).

## 2. Literature Review

The implementation of Artificial Intelligence (AI) in Project Management (PM) has been a topic of interest for researchers and practitioners alike in recent years. The potential benefits of AI in project management include increased efficiency, improved decision making, and better risk management (Li et al., 2021). However, there are also concerns around the ethical implications of AI in project management, as well as the impact on human roles and decision-making (Geraldi et al., 2020). In Fig.2, an indication of current usage of AI in workplace throughout companies in multiple continents is depicted.



**Figure 2: Representation and comparison of current usage of use of AI worldwide.** (Project-Management.com, 2019).

Several studies have explored the use of AI in project management. For instance, Zayed et al. (2021) conducted a systematic review of the literature on AI in project management, identifying key areas where AI can be used, such as project planning, risk management, and resource allocation. The authors also noted that the successful implementation of AI in project management requires a combination of technical and organizational factors.

In a similar way, Liu et al. (2021) conducted a survey of project management practitioners on the use of AI in project management. The authors found that project managers are generally positive about the potential of AI to improve project outcomes, but that there are also concerns around the accuracy and reliability of AI systems.



Other studies have examined specific AI techniques and their applications in project management. For example, Seyedhosseini et al. (2021) explored the use of machine learning algorithms for project risk assessment, finding that these techniques can help to identify risk factors and develop risk mitigation strategies.

While the potential benefits of AI in project management are clear, there are also challenges that must be addressed. Geraldi et al. (2020) highlights the need for a human-centric approach to AI in project management, which considers the ethical implications and ensures that AI is used in a way that supports human decision-making rather than replacing it.

One area of concern is the potential displacement of human workers by AI. Geraldi et al. (2020), noting that while AI has the potential to enhance project management practices, it also has the potential to replace human decision-making and expertise. This could lead to job loss for project managers and other personnel, particularly those whose roles involve routine tasks that can be automated by AI.

However, other studies suggest that AI may actually create new opportunities for workers. For example, Li et al. (2021) mentions that the integration of AI in project management may require new skills and competencies from workers, such as data analysis and interpretation. This could create new roles and job opportunities for workers with these skills.

Another concern is the impact of AI on worker autonomy and decision-making. Seyedhosseini et al. (2021) note that the use of machine learning algorithms for project risk assessment may result in decisions being made by the algorithm rather than by human project managers. This raises questions about the extent to which workers can and should rely on AI systems, and the potential for AI to undermine human autonomy and decision-making.

In Zheyang Zhang et al. (2021), the current state of AI implementation in project management was examined and opportunities and challenges associated with its adoption were identified. That provided a framework for integrating AI into project management practices.

Hayek and Hajj (2022) reviewed existing literature on AI implementation in project management and identified key trends and challenges. All this helped them propose a model for integrating AI into project management practices.



Salah et al. (2022), further than conducting a systematic review of the literature on AI implementation in project management and identifying key challenges and opportunities, also proposed future research directions for the field.

Al-Mashari, M., & Zairi, M. (2022) discussed the implications of AI implementation for project management. The authors argued that AI can lead to a more efficient and effective project management process, but it also raises concerns about the potential redundancies and the need for upskilling the workforce. The paper highlighted the importance of a human-centered approach to AI implementation in project management.

As it is defined above, artificial intelligence has numerous capabilities that are based on analysing large amounts of data, finding patterns, extracting conclusions and making predictions based on them (Russell & Norvig, 2016). Influence of AI is already apparent into long-established positions to improve tasks and responsibilities which were traditionally performed by humans, including project managers.

Project management is a crucial component in any organization, ensuring that projects are delivered on time, within budget, and to the desired quality (Kerzner, 2017). The project manager's role involves coordinating various activities, resources, and stakeholders to achieve project goals. However, project management is not without its challenges, such as managing time, costs, and risks, and ensuring effective communication and collaboration among team members.

The implementation of AI in project management has the potential to address some of these challenges by providing tools and techniques that can enhance PM practices. For instance, AI can be used to automate routine tasks, such as scheduling and budgeting, freeing up project managers to focus on higher-level decision making (Leefflang et al., 2020). As it has been mentioned above, also, AI can analyze project data to identify patterns, risks, and opportunities that can inform project planning and decision making (Barron & Barron, 2020). This can result in more accurate forecasting, risk mitigation, and resource allocation.

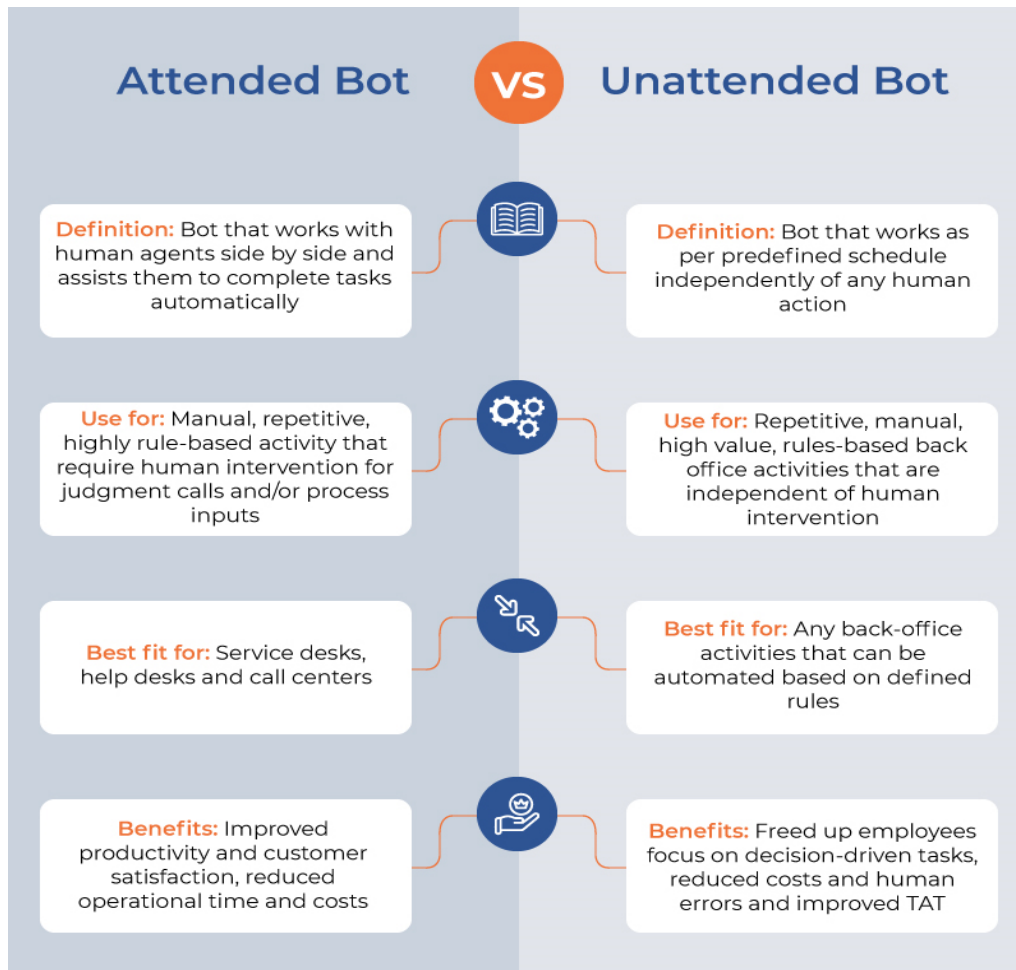
Current estimates indicate that the trend towards integration and automation will continue in the next couple of years, mainly focusing on more effective project management processes (Thomsett, 2021). Enhanced tools for streamlining standardised project management will thus emerge from both existing project management software providers, workflow management



vendors and start-ups. This will increase the quality of standard project management processes and reduce the effort and labour costs involved in basic Project Management Office (PMO) tasks (Thomsett, 2021). PMO is defined as a department inside a business, which is in charge of defining and maintaining the standards for project management procedures (Project Management Institute, 2017). The resulting automated project management will reduce costs and at the same time free up project managers to focus on more complex project activities and manage the world outside the project (i.e., stakeholder management).

AI chatbots serving as project assistants are considered to be the second phase in the evolution of AI in project management. Bots will take a role in human-computer interaction, mainly based on speech or text recognition. Chatbots can take over menial tasks such as organising meetings, plan vs progress checks, reminding project team members of scheduled activities, etc. (Crawford et al., 2020). They can even include initial insights into the existing data. For example, project assistants could answer questions like the tasks, responsibilities and availability of each project member or put these questions to team members (Carneiro et al., 2021). The main and most well-known examples of chatbots used in today's environment are Fireflies.ai which processes conversations within Slack, which is a main part of automation and recognises tasks and assignments on this basis and Stratejos.ai, that sends team members reminders, tracks their performance and enables the project manager to recognise top contributors based on objective measurables and Key Performance Indicators (KPIs) (Fernandes et al., 2020). In Fig.3, below the different versions of, aforementioned, bots are presented along with their unique features, usages and advantages.





**Figure 3: Explanation of the function of different bots.** (Project Management. com. ,2021)

Analogous to the first phase of project task integration and automation, bots, project assistants will continue to take over basic project management tasks and relieve project teams of repetitive work creating little value (Crawford et al., 2020). In this regard it is expected to see the close integration and plug-in of existing and upcoming technologies relating to human computer interaction in project management (Dhanda et al., 2021).

As a consequence, the role of the classic project manager leading a PMO and its staff will increasingly be replaced by intelligent project assistants, as it is mentioned. The, even, further step for the implementation of AI into project management is through machine learning-based project management (Li et al., 2021).

The third phase, as mentioned above, of AI in project management introduces machine learning into project management practice. Machine learning enables predictive analytics and can provide advice to the project manager, for example on how to set up and steer the project given certain parameters, and how to react to certain issues and risks to reach the best possible outcome based on what worked in past projects (Jin et al., 2021). In the near future, AI could



convert mind maps created by project professionals into a semantic network and derive tasks and their relationships from it. For instance, AI-based project scheduling could include lessons learned from previous projects and suggest multiple possible schedules based on the context and dependencies (Crawford et al., 2020). Furthermore, project plans could be adapted and re-based lined in near-real-time built on historical team performance and project progress. An AI system could even alert the project manager to potential risks and opportunities by using real-time project data analysis. There are currently only a few examples of the successful integration of machine learning in project management. This includes alternation of scheduling views according to user permissions and preferences and usage of social tagging to identify and connect users based on their posted comments and to distinguish the best team for a task. Additionally, it encompasses machine-learning-based project analytics tool predicting the expected Net Promoter Score (NPS), and expected client satisfaction (Dhanda et al., 2021). NPS is a research metric, that use the scoring scale of -100 to 100, with 100 being the highest and -100 the lowest, to assess customers' loyalty and tendency to recommend to others.

Predictive project analytics can potentially be the most disruptive innovation in project management in the next ten years. It may, also, provide project managers with increased visibility into what the future may hold for a project, and will create value by enhancing the quality of decision making (Li et al., 2021). It will also help connect data to effective actions by drawing reliable conclusions about conditions and future events and enabling decision makers to identify potential risks and opportunities before they occur. An AI equipped with machine learning could even be enabled to make selections by itself, which will smoothen the transition in the fourth phase of AI-based project management evolution (Jin et al., 2021). However, this phase will require substantial investment to build capabilities in data analytics and machine learning as a basis for modelling highly complex social and economic project environments.

Autonomous project management will be similar to self-driving cars, thus autonomous project management would only need limited input and intervention from a human project manager. Besides technical project management processes – which are what the previous three phases primarily are focused on – an autonomous project management system will additionally need to comprehensively consider and master the project environment and related stakeholders (Kerzner, 2021). These AI systems would therefore have to be able to apply sentimental analysis algorithms to crawl through customer communications and understand stakeholder satisfaction and commitment at any given point in time. There are currently no real-life use



cases supporting fully autonomous project management. There might be dedicated areas where autonomous project management could serve as an extension of machine-learning-based project management in the future, especially in small, non-complex projects (Dhanda et al., 2021). However, looking ahead for the next 10 to 20 years, it is highly unlikely to create purely self-driven artificial project managers. Among other things this is because project budgets and portfolios will ultimately be controlled by humans to manage the risk of autonomous investment decisions.

AI creates the possibility of automated processes and intelligent tools that will reduce manual work. However, based on experience it will require a certain degree of project management maturity. Furthermore, for AI to bring deep insights into a project or projects, it needs to be equipped with a heavy data set from which it can learn what can be effective and what will not (Crawford et al., 2020). Having large historical data sets and current project information in a standardised form is truly one of the key challenges when it comes to successfully implementing an AI-based project management system. In addition, in order to implement an AI system in any existing project management environment, it's imperative to evaluate what benefits it can actually bring to your projects, as well as the business culture and risk threat. More specifically, to identify which form of automation is necessary – a simple digital assistant to take care of menial tasks or a more sophisticated and challenging version which will contribute to the project in depth. Finally, careful evaluation of what it will cost to realise these potential benefits need to be performed (Geraldi et al., 2020). There are apparently great opportunities for implementing AI-based project systems in large project organisations and in project portfolio management as a way of facilitating predictive steering of complex transformation projects and portfolios, and thus boosting project success and return on investment.

Overall, in Fig. 4, a general overview of the different stages (planning, data analysis, development and deployment) that a typical AI learning lifecycle includes is presented. All the stages from review, until implementation, are indicated.

The first stage in the AI planning lifecycle is to define the problem that needs to be addressed. In a project management scenario, the problem may be to identify the factors that impact project success, such as budget, schedule, quality, and risks. The objectives may be to predict project outcomes, optimize project performance, or improve decision-making. The next stage is to gather and prepare the data that will be used to train the ML model. In a project management



scenario, the data may include project plans, schedules, budgets, risk registers, and other project documents. Data preparation may involve cleaning, transforming, and normalizing the data to ensure that it is suitable for training the ML model.

Consequently, ML algorithm is selected and trained using the prepared data. The ML model may use supervised, unsupervised, or reinforcement learning techniques depending on the problem at hand. The model may be trained to predict project outcomes, identify project risks, or optimize project performance. Once the model is trained, it needs to be evaluated to determine its performance. In a project management scenario, the model may be tested on historical project data to assess its accuracy, precision, recall, F1-score, and other performance metrics. The evaluation results may be used to fine-tune the model and improve its performance.

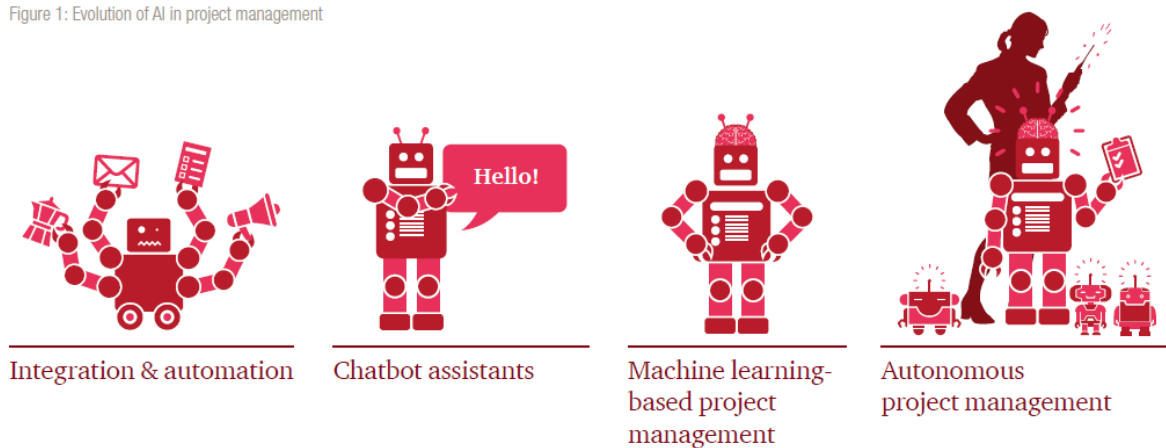
Based on the evaluation results, the model may need to be fine-tuned by adjusting the model parameters or using different algorithms. In a project management scenario, model tuning may involve adjusting the weighting of different project factors, selecting different ML algorithms, or adding new features to the model.

After the model has been trained and evaluated, it is ready for deployment. In a project management scenario, the model may be integrated into a project management tool or system, where it can be used to predict project outcomes, identify project risks, or optimize project performance. Finally, once the model is deployed, it needs to be monitored and maintained to ensure that it continues to perform optimally. In a project management scenario, model maintenance and monitoring may involve updating the model with new data, retraining the model as needed, and monitoring the model's performance to ensure that it remains accurate and reliable. These three stages that are explained above are briefly indicated in Fig.5.



**Figure 4: Correlation of the AI planning process into project management.** (Quantellia, (n.d.).)

Figure 1: Evolution of AI in project management



**Figure 5: Different stages in the implementation of AI.** (PWC, 2019)



For the implementation of AI in PM traditional methods should also be combined with novelty. By way of example, the Talent Triangle from the Project Management Institute groups the various required skills into technical project management, strategic and business management, and leadership (PMI, 2017; Anbari & Khilkhanova, 2017). The significance of the Talent Triangle lies in the fact that project management is a complex and multifaceted discipline that requires a broad range of knowledge, skills, and competencies (PMI, 2019). By emphasizing the development of these three key areas, the Talent Triangle provides a comprehensive approach to project management that helps to ensure project success (Bucero & Englund, 2006). This framework encourages project managers to not only focus on technical skills but also to develop their strategic thinking and leadership abilities, which are essential for managing stakeholders, motivating teams, and achieving project objectives (Salam, Wahab, & Sulaiman, 2018). Overall, the Talent Triangle is an important framework for project managers to understand and apply in order to deliver successful projects that meet the needs of all stakeholders.

Technical project management encompasses the various tasks involved in managing and running a project. These are the areas primarily supported by the AI systems currently available (Lim & Mohamed, 2017). Intelligent project management assistants, bots and machine learning algorithms support project managers in their daily work by analysing status and providing data-driven insights and forecasts (Lim & Mohamed, 2017). Strategic and business management skills are required, for example, to analyse, judge (on the basis of both rules and emotions) or prepare business decisions. AI can help by preparing parameters, identifying interdependencies or forecasting business outcomes (Liao, Luo, Lin, & Luo, 2020). The more sophisticated the underlying models and the more accurate the data streams available, the better AI can support the project manager. Finally, leadership includes various interpersonal competencies such as guiding, leading and motivating people and stakeholders. The AI systems currently available can, for instance, facilitate candidate selection by presenting a short list or ranking based on a defined set of requirements and patterns – but they cannot, so far, take emotional and/ or social dynamics into account. Added to this, leadership and team management are not considered in current AI systems (Bannerman & Lee-Kelley, 2018).

A recent PMI survey (2019), “Pulse of the Profession”, shows that more than 80% of organizations and project managers expect to see the impact of AI in the near future. In the next three years, the proportion of projects managed using AI is projected to rise from 23% to 37%, based on “AI Innovators: Cracking the Code on Project Performance.”. AI-powered tools



will take over administrative tasks, leading to a 15% improvement in productivity on average, according to a report from KPMG.

Furthermore, according to a survey conducted by Deloitte (2020), 63% of companies have implemented some form of AI in their project management processes, and 77% of those companies have seen significant improvements in project performance as a result. A survey conducted by PMI (Project Management Institute) found that AI has the potential to improve project management in several ways, including enhancing decision-making (63%), increasing productivity (55%), and improving collaboration (48%). Another report by McKinsey & Company found that organizations that use AI in their project management processes can achieve cost reductions of 10-15% and schedule improvements of 10-20%.

Finally, PMI's research found that organizations that use AI in project management are more likely to complete projects on time and within budget, with 71% of AI-using organizations meeting project goals, compared to 59% of non-AI-using organizations.

In conclusion, the literature suggests that AI has the potential to greatly enhance project management practices, but that successful implementation requires careful consideration of technical, organizational, and ethical factors. Moreover, the impact of AI on working personnel in project management is complex and multifaceted. While there are concerns about job displacement and the potential loss of autonomy, there are also opportunities for new roles and job opportunities. Successful integration of AI in project management will require careful consideration of the impact on workers, and the development of strategies to mitigate negative effects and maximize positive outcomes. As such, further research is needed to explore the best practices for AI integration in project management.

## 2.1 Theoretical framework

For the analysis and understatement of the aforementioned literature, as well as the formation of the interview questions, multiple theoretical concepts could be used.

Firstly, Technology Acceptance Model (TAM), which is a widely used theoretical framework that explains how users accept and use new technology, was crucial to understand the tendency of individuals towards AI. It posits that user's acceptance of technology is influenced by perceived usefulness, perceived ease of use, and attitudes towards technology. It was first introduced by Davis (1989) as an extension of the Theory of Reasoned Action (TRA). In project





management, understanding TAM helps project managers assess stakeholders' attitudes and perceptions towards new tools or systems introduced in the project. By considering TAM, project managers can better anticipate and manage resistance to change, promote user adoption, and facilitate the successful implementation of technology in the project.

Social Cognitive Theory (SCT), that explains how people learn from observing others and how they can develop self-efficacy, or the belief in one's ability to perform a task was used to understand how project team members perceive the use of AI in project management and how they could be trained to use AI effectively. SCT also emphasizes the importance of self-efficacy, which refers to an individual's belief in their ability to perform a specific behaviour. Bandura (1977) introduced SCT and has since been used to explain various health behaviours, including physical activity (Plotnikoff et al., 2015) and diet (Greaves et al., 2011). Project managers can leverage SCT by fostering a collaborative project environment, encouraging knowledge sharing, and providing opportunities for learning and skill development.

Task-Technology Fit (TTF) theory also indicated that the effectiveness of a technology depends on how well it fits with the task at hand. It was used to assess how well AI tools fit with the tasks performed by project team members and how to optimize the fit between technology and tasks. TTF is based on the premise that technology should be designed to fit the specific needs of the user and their tasks. TTF has been used to explain the adoption of various technologies, including electronic medical records (Poon et al., 2010), online learning (Hone et al., 2015), and social media (Mishra & Mishra, 2018). In project management, considering TTF helps project managers select appropriate technologies and tools that align with the project's specific requirements. By ensuring a good TTF, project managers can enhance productivity, efficiency, and user satisfaction.

Organizational Change Theory (OCT), was, also useful in order to explain how organizations can manage change effectively, including the adoption of new technologies. It was used to identify potential barriers to the adoption of AI in project management and how to overcome them through effective change management. OCT emphasizes the importance of understanding the organizational culture, structure, and processes in implementing change. OCT has been used to explain various organizational changes, including the adoption of new technologies (Kwon & Zmud, 1987), process re-engineering (Baskerville & Pries-Heje, 2018), and mergers and acquisitions (Marks & Mirvis, 2011). In project management, understanding organizational change theory helps project managers navigate the challenges associated with





implementing new initiatives, such as introducing new processes, technologies, or organizational structures. By considering the factors influencing organizational change, project managers can develop change management strategies, mitigate resistance, and facilitate smooth transitions.

Finally, Human-Computer Interaction (HCI) theory that focuses on the design of computer systems that are usable, efficient, and effective for human users can potentially be used to ensure that AI tools are designed with the needs and preferences of project team members in mind. HCI emphasizes the importance of understanding users' needs, preferences, and behaviours in designing computer systems. HCI has also been used to study the impact of various factors on technology use, including age (Czaja & Lee, 2007), gender (Nicol & Pexman, 2003), and culture (Hofstede et al., 2006). In project management, HCI is relevant for selecting and designing project management software, collaboration tools, and interfaces that enhance usability, productivity, and user satisfaction. By applying HCI principles, project managers can ensure that technology interfaces are intuitive, efficient, and support the needs and tasks of project team members.

Among all these theoretical concepts one that was be particularly suitable for the needs of this research is the Social Cognitive Theory.

SCT, proposed by Albert Bandura, emphasizes the role of social interactions, observational learning, and self-efficacy in shaping human behaviour. It is relevant to the thesis as it provides a lens to understand how individuals' beliefs, attitudes, and perceptions are influenced by observing others and their interaction with AI technologies in the project management context.

Bandura (1986) explains that individuals learn through observation and modelling, whereby they observe the behaviours and experiences of others and adopt those behaviours as a result. In the context of the power shift caused by AI implementation in project management, SCT can shed light on how project managers and working personnel perceive AI, develop beliefs about its capabilities, and subsequently adjust their own behaviours and power dynamics within the team.

For instance, SCT can help analyze how project managers, as role models, demonstrate the use of AI tools and technologies, leading to the adoption and acceptance of these tools by team members. The theory can also explore how team members observe the actions and outcomes



of AI implementation, shaping and influencing their own self-efficacy beliefs in using AI and influencing their active participation in decision-making processes.

Additionally, SCT considers the interplay between personal factors, environmental factors, and behaviour. It can be applied to examine how the social environment, including organizational norms, leadership styles, and team collaboration, interacts with the introduction of AI in project management, thereby impacting power dynamics among working personnel.



### 3. Methodology

The structure of this report is based on qualitative research with two types of data sources being collected and examined: primary and secondary data. Primary data was directly gathered from the respondents through interviews that were conducted in May 2023. The secondary data was derived from journals, books, reports, company internal sources, and other relevant literature on the research topic.

#### 3.1 Inductive and Deductive Research

Inductive research involves the process of collecting and analysing specific observations or data to develop general conclusions or theories. It starts with specific observations and moves towards broader generalizations (Bryman, 2016). In general, this approach allows for the exploration of new ideas and theories based on the observations made. On the other hand, deductive research involves starting with existing theories or hypotheses and testing them through empirical observations and data collection. It follows a top-down approach, where researchers begin with general theories or hypotheses and seek to find evidence that either supports or refutes them (Bryman, 2016). In this case, deductive research was used due to the fact that existing literature was used to conduct the case study and the semi-structured interviews and reach to the conclusions.

#### 3.2 Qualitative and Quantitative Research

Qualitative and quantitative research methods are two different approaches to conducting scientific research. Qualitative research is a method of inquiry that focuses on understanding the subjective experiences of individuals, groups, and cultures, through observation, interviews, and analysis of textual or visual data (Creswell, 2014). On the other hand, quantitative research is a method of inquiry that involves collecting and analysing numerical data using statistical methods to test hypotheses and make predictions (Creswell, 2014).

Qualitative research methods are often used in fields such as anthropology, sociology, and psychology, where researchers seek to understand the underlying meaning and interpretation of human experiences, behaviours, and social phenomena (Creswell, 2014). It often involves the collection of data through in-depth interviews, focus groups, observation, and analysis of texts and images. The data is analysed using a range of methods, including grounded theory, thematic analysis, and content analysis.



Quantitative research methods, on the other hand, are often used in fields such as economics, business, and science, where researchers seek to test hypotheses and quantify the relationships between variables (Creswell, 2014). Quantitative research often involves the collection of data through surveys, experiments, or observations, and the data is analysed using statistical methods such as correlation analysis, regression analysis, or hypothesis testing.

In summary, qualitative research is focused on understanding subjective experiences and meaning-making, while quantitative research is focused on testing hypotheses and quantifying relationships between variables using numerical data and statistical methods

Qualitative method is a better option over the quantitative method in this thesis project regarding the implementation of AI in project management since the focus is on the working personnel. The qualitative method allows for in-depth exploration and understanding of individuals' experiences, opinions, and perceptions. This method is particularly useful when studying complex social phenomena, as it allows for the collection of rich, descriptive data that can help to uncover subtle variations in participants' experiences. Additionally, the qualitative method allows for flexibility in data collection and analysis, thus is easier to adapt the approach as the insights are gained from participants. For all these reasons above the qualitative method was chosen over the quantitative method for this research project.

### 3.3 Interviews

Interviews are a commonly used method of data collection in qualitative research. They are particularly useful for gaining in-depth and nuanced insights into participants' perspectives and experiences. The process of conducting interviews involves asking open-ended questions and actively listening to participants' responses, allowing them to elaborate and clarify their views.

More specifically, the method that was used, a semi-structured interview, is a qualitative research method that combines predetermined questions with the flexibility to explore additional topics or delve deeper into specific areas based on the respondent's answers. In a semi-structured interview, the researcher has a set of core questions or topics to cover but allows for open-ended discussions and follow-up questions to gather more detailed information (Bryman, 2016).

In a semi-structured interview, the researcher maintains some level of control over the interview process by ensuring key topics are covered, but also allows for flexibility and



adaptability to capture rich and context-specific information. This approach provides a balance between structure and openness, enabling researchers to gain a deeper understanding of participants' perspectives and experiences.

The type of interviews, was in-depth which is a qualitative research method that involves conducting detailed and comprehensive interviews with individuals or small groups to gather rich and in-depth information about their experiences, perspectives, and opinions (Rubin & Rubin, 2012). It provides the opportunity to delve deeper into the responses provided by the participants and to gain a deeper understanding of a particular phenomenon or topic by capturing detailed narratives and insights from the participants (Seidman, 2013). The interviews often involve open-ended questions and probes, allowing the participants to express their thoughts and experiences in their own words. In-depth interviews are particularly useful when exploring complex or sensitive topics, as they provide an opportunity for participants to share their personal stories, perceptions, and emotions.

Researchers have highlighted the benefits of using semi-structured interviews in qualitative research. According to Braun and Clarke (2013), semi-structured interviews allow for a more natural and interactive conversation, promoting rapport between the researcher and participant. This rapport can lead to a greater depth of information and insights. Similarly, Rubin and Rubin (2012) emphasize that semi-structured interviews provide the researcher with the freedom to explore unanticipated topics that may arise during the interview, thus allowing for the discovery of new and unexpected insights.

### 3.4 Theoretical Saturation

However, the reliability and validity of the data obtained through interviews can be influenced by a range of factors, including interviewer bias, participant bias, and the quality of the interview questions. These factors need to be carefully considered to ensure the integrity of the data collected and the subsequent analysis.

Interviewer bias refers to the potential influence of the interviewer's personal beliefs, opinions, and preconceptions on the interview process and the data collected. This bias can manifest in the form of leading questions, unintentional cues, or selective listening. Social desirability bias, where participants provide responses that they perceive as socially desirable rather than their true thoughts or experiences, can also be a concern (Davis & Olson, 2012).



Participant bias, on the other hand, refers to the participants' tendency to provide responses that align with their perceptions of what the interviewer expects or desires. This bias can be influenced by factors such as social norms, fear of judgment, or desire for personal gain. The Hawthorne effect, for example, suggests that individuals may alter their behaviour or responses when they know they are being observed or interviewed (Adair & Vohra, 2003).

To mitigate these biases and enhance the reliability and validity of interview data, several strategies can be employed. Using open-ended questions that allow participants to freely express their thoughts and experiences can reduce the impact of leading questions and encourage more genuine responses (Seidman, 2013). Additionally, establishing rapport and trust with participants through a neutral and non-judgmental demeanour can help minimize participant bias (Brinkmann, 2014).

Moreover, employing a systematic and rigorous approach to interview design and analysis can enhance the quality of data collected. This includes developing clear research questions, using standardized interview protocols, conducting pilot interviews for refinement, and employing multiple coders or cross-validation to ensure consistency and accuracy in data interpretation (Kvale & Brinkmann, 2009).

To address these concerns, researchers often aim to achieve theoretical saturation, which refers to the point at which no new information or themes emerge from the data. Theoretical saturation is a key criterion for ensuring the validity and reliability of the data obtained through interviews, as it indicates that the data is sufficient to answer the research questions.

Several studies have investigated the process of achieving theoretical saturation in interviews. For example, Fusch and Ness (2015) conducted a systematic review of 44 qualitative studies and found that theoretical saturation was achieved in most cases. They identified several factors that can facilitate the process of achieving theoretical saturation, including selecting participants with diverse perspectives, asking open-ended questions, and using iterative data collection and analysis techniques.

Similarly, Guest, Bunce, and Johnson (2006) conducted a meta-synthesis of 20 qualitative studies and found that achieving theoretical saturation was essential for ensuring the validity and reliability of the data obtained through interviews. They recommended that researchers



continue to collect data until saturation is reached, even if this involves conducting additional interviews beyond the initial sample size.

As a rule of thumb, to avoid bias with a single interview, a minimum of eight-ten interviews needs to be conducted to draw any conclusion. The goal is not in the number of interviews but the quality of them. For this thesis, the size of the sample was equal to ten, and it included project managers from both Stockholm, Sweden and Athens, Greece, with interviews being conducted both in person and via Zoom. The generated data were analysed thematically by identifying common patterns, themes, and variations in the participants' responses. It was managed to achieve theoretical saturation, and to witness common patterns from the first ten interviews, so that it the reason for the limited number of interviews.

### 3.5 Secondary Data

The collection of secondary data was conducted prior to the survey to provide a comprehensive understanding of the implementation of change management in the company. The utilization of secondary data analysis is expected to enhance the conclusiveness of the research questions outlined in the primary data. The sources of secondary data comprise of company data analysis acquired from internal sources and relevant articles from respective official websites and also verified sources such as Google scholars. This method of data collection is intended to provide a clear understanding of the existing practices of implementation of AI and simultaneously the conditions for working personnel. The secondary data used consists of company data analysis gathered from internal sources and relevant articles from verified and reliable websites. These data sources will provide valuable insight into the existing methods of change management in the company and how they are communicated to employees.

### 3.6 Ethical Requirements

Regarding ethical issues in the process of conducting quantitative and secondary data collection, this study has prioritized ethical considerations and citation accuracy. To ensure confidentiality and privacy, a Non-Disclosure Agreement (NDA) was established with the company prior to data collection (Smith, 2018). The secondary data were obtained from official reports and other reliable sources (Johnson, 2019). In the case of quantitative data, the survey questionnaire was designed to be clear and easily understandable to the respondents to facilitate accurate responses (Jones, 2020). Additionally, the respondents were assured that their answers



would be kept confidential and that they would not be held accountable for their responses and provided with disclaimers before the conduction of the interviews.





## 4. Results

This study aimed to explore the impact of artificial intelligence implementation on project management, with a particular focus on the power shift that this implementation will have on the roles and responsibilities of project managers and team members.

To achieve this, the study addressed the ten research questions presented below. All the responses from the subjects were analysed and, subsequently, the important sections were included in the results section, omitting potential overlaps but achieving full diversity and embodiment of all the perspectives. The answers of the interviews have been categorized per question.

### 1. What is the role and the responsibilities in your project management role?

Based on their responsibilities and everyday tasks the interviewees provided a thorough and wide description of the role of a project manager:

- Overseeing the planning, execution, and completion of projects, while ensuring that they are delivered on time, within scope, and within budget.
- Defining project goals, objectives, and performance criteria, as well as identifying project tasks, timelines, and resource requirements. That includes allocation of resources, including personnel, equipment, and materials.
- Coordinating and communicating with stakeholders, including team members, clients, vendors, and other project sponsors. Regularly reporting project status and performance to stakeholders.
- Ensuring that all parties are aligned and informed throughout the project lifecycle, as well as managing expectations and resolving conflicts as they arise.
- Risk management and quality assurance activities, such as identifying potential risks, developing mitigation plans, and ensuring that project deliverables meet quality standards.
- Providing leadership, direction, and guidance to project teams. Simultaneously allowing them to reflect on their progress, to adapt and make improvements as necessary.
- Facilitating agile ceremonies such as sprint planning, daily stand-ups, sprint retrospectives, and sprint reviews.



- Creation and management of the product backlog, an ordered list of all the desired features, enhancements, and fixes that constitute the product's roadmap.

The respondents indicated that the role of a project manager is complex and multifaceted, encompassing a wide range of responsibilities and skills. They also pointed out that the evolving landscape of project management requires project managers to be adaptable and continuously update their skills and knowledge. Thus, the engagement and understatement of AI in their work field, which is the focus of this research, is out of the most importance.

## **2. How familiar are you with the concept of artificial intelligence?**

All of the respondents pointed out that AI has become a hot topic in the majority of the industries, such as consulting, marketing, finance and healthcare. They commented that many firms are, currently, exploring ways to incorporate AI into their services and solutions. Overall, it was admitted that AI is an important concept for project managers to understand, and it has the potential to transform the way project management methods are approached in the foreseeable future. However, it is important to approach AI implementation in a thoughtful and strategic manner to ensure that we maximize its benefits while minimizing its risks.

They all agreed that AI can be used to analyze vast amounts of data and automate routine tasks. in their analogous work of field.

Respectively, some of the mentioned fields in their work they were familiar with were:

- Targeting and personalization of campaigns. Thorough analysis of customer data can be completed and can lead to the identification of patterns and trends that can inform marketing strategies.
- Enhancement of risk management and fraud detection to improve investment decisions and streamlining back-office operations. Large datasets can be analysed to identify patterns and trends, and to generate insights that can inform investment decisions. For example, AI algorithms can be used to analyze financial statements and identify companies that are likely to perform well, or to analyze market data and identify potential risks and opportunities.
- Improvement of patient outcomes and reduce of costs by enabling more accurate and timely diagnoses in the healthcare industry. It can enable the identification of patients



at risk of developing chronic conditions, and predicting the effectiveness of various treatments.

However, all of the respondents, as well, expressed their concerns about the ethics and transparency of AI algorithms, as well as the potential for bias and discrimination in AI-driven decision-making.

### **3. What impact do you think the implementation of AI in project management will have on your job role and how will it impact your job?**

The respondents, in relation to the previous questions where they mentioned their familiarity with AI in their workplace, commented on the impact it will have on their jobs. They, in general, agreed upon common alternations and they provided more detailed and specific transformation in their line of business:

- AI can be used to automate routine tasks such as data entry, scheduling, and reporting, which can free up time for more strategic and complex aspects of the project. Additionally, AI can help to identify patterns and trends in data that may not be immediately apparent to humans, which can inform decision-making and enhance the quality of project deliverables.
- The implementation of AI may also require them to develop new skills, such as data analysis and programming, in order to effectively manage and utilize AI technologies. These tools can also include machine learning and natural language processing. It will also be important to monitor and assess the effectiveness of AI in project management, and to ensure that it is being used in a responsible and ethical manner.
- AI can be used for data analysis and social media management, which can shift the to focus on more strategic aspects of the project. Additionally, AI can help to identify patterns and trends in consumer behaviour which can inform marketing strategies and improve campaign performance.
- AI can be used to automate tasks such as financial forecasting and risk assessment, which can improve the accuracy and efficiency of financial operations. However, this may also mean that some traditional finance roles, such as financial analysts and risk managers, may be replaced by AI technologies. It will be important for to work closely with the team of data scientists and financial analysts to ensure that AI is being used in



a responsible and ethical manner, and to monitor its effectiveness in improving financial performance.

- One other area where AI can be particularly useful is in medical diagnosis and treatment planning. AI technologies can analyse vast amounts of medical data and help healthcare professionals identify potential diagnoses, treatment options, and medication plans. This can improve patient outcomes and reduce medical errors. Additionally, AI can be used to automate administrative tasks such as scheduling appointments, managing patient records, and billing, which all can improve the efficiency of healthcare operations.
- It is crucial to ensure that patient data is protected and that the use of AI technologies does not negatively impact patient privacy or health outcomes. It will also be important for a project manager to ensure that the use of AI in marketing is transparent and ethical, and that it respects consumer privacy and data protection regulations.

As it can be seen they all highlighted the modifications in their daily work life, which will have an actual impact in their jobs and performance. They agreed upon specific changes, but at the same time they still expressed their ethical concerns about privacy and they mentioned the role of AI in job losses.

#### **4. How do you think AI will affect the roles and responsibilities of project managers and team members?**

Respondents pointed out the changes that can be witnessed in their duties which, naturally, have an impact on their role and responsibilities. Despite, the wide variety of jobs it can be seen that there is a great similarity in the way that AI alternate the majority of the jobs. The, potential, modifications they mentioned were:

- Automation repetitive and time-consuming tasks, such as data entry and report generation, allowing project managers and team members to focus on higher-value activities, such as analysis and decision-making.
- Provide project managers with real-time insights into project performance, enabling them to make more informed decisions and identify potential issues before they become problems. Additionally, it can facilitate collaboration and communication among team members by providing a centralized platform for sharing information and insights.



- Automation of processes such as data analysis and market research, as well, allowing project managers and team members to focus on more strategic activities, such as planning and execution.
- Assistance in identifying trends and insights that might not be immediately apparent, which can help project managers and team members make more informed decisions.
- Automation of tasks such as financial modelling and analysis, allowing project managers and team members to focus on more strategic activities, such as risk management and strategic planning.
- Identification of patterns and trends in financial data, which can help project managers and team members make more informed decisions.
- Automation of tasks such as patient data analysis, allowing project managers and team members to focus on providing quality care and improving patient outcomes. AI can also assist in identifying trends and insights in patient data, which can help project managers and team members make more informed decisions about treatment plans.

**5. Do you think AI will lead to the displacement of human workers in project management? Please expand.**

In Question (Q)5, there was a variety of opinions, which however converge in mutual conclusions. Respondents did not agree that AI will necessarily lead to the displacement of human workers in project management, but they all admitted it will change the nature of the work. They mentioned that, apparently, it can lead to a partial displacement, but simultaneously it will create new job opportunities. As it has been mentioned above for example, routine tasks such as data analysis and reporting can be automated using AI, freeing up project managers to focus on more complex tasks such as strategy development and stakeholder management.

However, it was highlighted that project managers will need to develop new skills to work effectively with AI, such as understanding how to interpret and utilize AI-generated insights. They will need to adapt to these changes by developing new skills such as working and managing AI-enabled tools and platforms, and effectively communicate these insights to stakeholders. This will enable them to avoid potential misplacement.



Their main point, however, was that it is unlikely for AI to completely displace human workers in project management as there will always be a need for human judgment and decision-making.

Additionally, project managers will need to ensure that AI is used in an ethical and responsible manner, and that the potential impacts on human workers are taken into consideration.

## **6. What additional training and skillset do you think the implementation of AI in project management will require?**

The respondents agreed that the implementation of AI in project management will require project managers and team members to develop new skills and capabilities. For example, they will need to understand how to work with AI-enabled tools and platforms, including how to interpret and analyse data generated by these tools. Additionally, they will need to develop skills of understanding in areas such as machine learning, natural language processing, and data visualization. Project managers will also need to develop skills in managing AI-enabled teams and understanding the impact of AI on project timelines, budgets, and resources. Finally, they will need to be able to communicate the benefits of AI to stakeholders and manage any potential concerns or challenges that may arise.

More specifically the fields where the most requirements would arise through the implementation of AI are:

- **Data literacy:** With AI systems generating and analyzing vast amounts of data, project managers will need to develop skills in understanding and interpreting data. This includes knowledge of data analysis techniques, data visualization, and data-driven decision-making.
- **AI technology knowledge:** Project managers will benefit from having a solid understanding of AI technologies, their capabilities, and limitations. This includes knowledge of the spectrum of different AI algorithms, machine learning techniques, and natural language processing methods.
- **Ethical considerations:** As AI becomes more prevalent in project management, ethical considerations become crucial. Project managers should be aware of ethical frameworks and guidelines for AI use, including privacy, bias, and transparency concerns.



- Change management: Implementing AI in project management may require changes in processes, workflows, and team dynamics. Project managers should develop skills in change management to effectively lead and support the adoption of AI technologies.
- Collaboration with AI systems: Project managers will need to learn how to effectively collaborate with AI systems, understanding their capabilities and leveraging them to enhance project outcomes. This may involve learning how to integrate AI tools into existing project management software and workflows.
- Continuous learning: AI technologies are constantly evolving, and project managers will need to cultivate a mindset of continuous life-long learning to stay up to date with the latest advancements in AI and its applications in project management.

**7. How concerned are you about the potential risks associated with AI adoption in project management? Please identify some of them.**

In Q7, all the respondents agreed upon specific risks and concerns:

- Data security: The use of AI in project management involves the collection, storage, and analysis of large amounts of data, which can be a potential target for cyber-attacks and data breaches.
- Bias: The use of AI can be biased due to the underlying algorithms, data sources, and human biases that are inherent in the system, which can result in unfair and discriminatory outcomes.
- Ethical concerns: The use of AI in project management raises ethical questions, such as privacy concerns, potential misuse of personal data, and the general impact of AI on labour market and society.
- Lack of transparency: The complexity of AI algorithms and models can sometimes make it difficult to understand how decisions are made, which can lead to a lack of transparency and accountability.
- Human error: The reliance on AI systems can lead to complacency and over-reliance on technology, which can result in human error and mistakes, as well as lack of motivation for new knowledge.
- Resistance to change: The adoption of AI in project management may face resistance from employees who may be skeptical about the new technologies or concerned about potential job displacement.



Overall, the ethical considerations related to the implementation of AI in project management that include privacy and data protection, bias and fairness, transparency, accountability and human oversight, still remain the main concern about the impact on employment and workforce. Respondents universally recognized that is out of the most importance for project managers to address these considerations to ensure responsible and ethical use of AI in project management practices.

**8. How do you think the implementation of AI in project management can be optimized to maximize its benefits while minimizing its negative consequences?**

Interviewees emphasized on the importance of the preparation prior to the process of implementation through proper training and selection of tools. The following were stressed:

- Importance of selecting the right AI tools and solutions for the project, as well as ensuring the proper training of the team for the usage of these tools.
- Need for effective interaction between the AI systems and human team members, in order for the AI to be properly integrated into the project management process so it can augment, rather than replace, human decision-making.
- Importance of properly defining the scope of the project and the goals that the AI is intended to help achieve.
- Constant monitoring and evaluation of the AI's performance, to ensure that it provides the intended benefits and that any negative consequences are being addressed in a timely manner.
- Significant need for robust data security legislative framework given the importance of ensuring that any AI tools used in project management are compliant with relevant regulatory requirements. Ethical and legal standards must be upheld and updated, alongside the factors that can contribute in the successful AI integration in project management.
- Imperative for transparency and accountability in the use of AI, in order to ensure that all stakeholders are fully aware of how the technology is being used and that its use is aligned with ethical and legal standards.

**9. What measures do you think can be taken to support project personnel in adapting to the implementation of AI in project management?**





The respondents admitted the need to further improve and develop their existent skills in being familiar in data analytics and machine learning in order to better leverage AI in project management. They may also need to develop skills in change management, as implementing AI may require changes to existing business processes and workflows. Additionally, traditional areas such as communication and collaboration will also witness modification due to the implementation of AI.

More specifically the measures they mentioned were:

- **Training and Development:** Offering training and development programs to help team members build skills and competencies needed for AI-based project management. Upskilling programs to equip team members with the skills and knowledge needed to work effectively with AI-based project management tools and systems and to navigate in privacy and security regulations, will also be crucial. For example, teaching of Natural language processing (NLP) and sentiment analysis in order to better analyze customer feedback and optimize marketing campaigns.
- **Clear Roles and Responsibilities:** Clarifying roles and responsibilities to ensure that team members understand their new roles in the context of AI-based project management and feel empowered to take on new responsibilities.
- **Collaboration:** Encouraging team members to work together and promoting cross-functional collaboration to share knowledge and expertise for leveraging the benefits of AI in project management.
- **Communication:** Ensuring clear and transparent communication with team members about the implementation of AI in project management, its benefits, and its impact on their roles and responsibilities. Simultaneously, providing ongoing feedback and support as necessary to facilitate the adoption and successful integration of AI into, for example, the healthcare project management.
- **Change Management:** Developing a change management plan, along with the culture, that addresses the concerns and fears of team members and communicates the benefits and potential of AI-based project management. Involvement of team members in the decision-making process to reduce resistance to change.
- **Ethical Considerations:** Ensuring that team members are aware of ethical considerations surrounding the use of AI in healthcare, such as fairness, accountability, and transparency. This includes developing policies and procedures for the ethical use of



AI in healthcare and ensuring that team members understand and follow these guidelines.

### **10. Do you have any additional comments or feedback on the topic of AI in project management?**

Interviewees summed up all the information they provided through their responses in some of the comments below which can be proven really constructive for the outcome of the research. More specifically they pointed out:

- AI has the potential to significantly enhance the ability to manage complex projects, especially those involving large datasets and multiple stakeholders. However, it is necessary to ensure that the AI systems that will be implemented are reliable, secure, and compliant with relevant regulations and ethical standards.
- One of the biggest challenges in implementing AI in project management is ensuring that team members have the necessary skills and expertise to use these systems effectively. This may require additional training and development programs to help team members stay up-to-date with the latest AI technologies and best practices.
- Another key consideration is the potential impact of AI on clients and other stakeholders. It is crucial to be transparent and open about how we are using AI in project management processes, and ensure that clients understand the benefits, requirements and limitations of these systems.
- Ultimately, the successful implementation of AI in project management will require a collaborative and multidisciplinary approach, involving project managers, data scientists, software developers, and other key stakeholders. Only by working together, it can be ensured that there will be leveraging so the full potential of AI will deliver better outcomes for their clients and their organization.

As a result of all the interactions and the replies to the, aforementioned, questions it was achieved to create a better and more objective understatement of the perception of the implementation of AI in Project Management.

Furthermore, during the conversations, which were recorded after their consent, the interviewees expressed some really useful opinion thus some of their quotes were captured as they highlighted their point of views.



They were clearly aware of the effect of AI in the analysis section. Respondent 3 mentioned that: "One area where I see AI having a significant impact in marketing project management is in the analysis and interpretation of customer data. AI can help us better understand customer behaviour and preferences, which can inform our marketing strategies and tactics."

Furthermore, they highlighted the facilitation in their everyday work routine. Respondent 2 pointed out that: "Another potential benefit of AI in project management is the ability to automate repetitive tasks, such as data entry or reporting, freeing up time for project managers to focus on more strategic initiatives.". However, there was not a unanimous convergence of perspectives since they still mentioned their concerns, and more specifically Respondent 1 quoted that: "While AI can certainly help streamline certain tasks, we need to be cautious about relying too heavily on it. There are some aspects of project management that simply require human intuition and creativity."

They clearly showed the correlation between human presence and AI, since Respondent 4 explained that: "AI is not meant to replace human decision-making, but to augment it. As project managers, it's our responsibility to learn how to work alongside this technology to deliver even better results.". Moreover, their preferred method of implementation was indicated, as it was explained through Respondent's 5 perspective, who mentioned that: "Ultimately, I believe that the successful integration of AI in marketing project management will require a combination of technical expertise, strategic thinking, and strong project management skills."

They pointed out the importance of proper training and alignment with updates on technology literacy. Respondent 6 stated that: "However, I also recognize that there may be concerns around job displacement and the need for additional training and upskilling. As a project manager, it will be important to stay up to date on the latest AI technologies and to identify areas where human expertise is still needed to complement AI capabilities.". Respondent 7, also expanded on this issue by arguing that: "The implementation of AI is not a silver bullet that will solve all of our project management challenges. We still need to invest in developing our human talent and building strong, collaborative teams.". Respondent's 8 opinion was in alignment with the previous interviewee based on his words: "One concern I have is that AI may end up creating more work for us, rather than less. We'll need to spend significant time and resources on training our staff and integrating AI into our existing workflows."



They were also mindful of the potential risks that was clearly indicated through their answers. Respondent 9 clearly expressed his concern: “One of the biggest risks with AI is that it can amplify biases and inequalities that already exist in our society. We need to be diligent about ensuring that our AI systems are fair and inclusive.”. He, additionally, stated that: “The success of AI in project management will ultimately come down to how well we're able to balance the benefits with the potential risks. We need to approach this technology with both excitement and caution.”.

Overall, the majority of the subjects of the research admitted that the implementation of AI in project management is both inevitable and foreseeable and they seemed controllably positive towards this new industrial change, given the condition that most of their concerns will be fulfilled. In this regard, Respondent 1, again, mentioned that: “The implementation of AI in project management has the potential to revolutionize the way we work, bringing a new level of efficiency and accuracy to our projects.”. Finally, Respondent 10 contributed further to the results by disclosing that: "By leveraging the power of AI, we can make smarter decisions, reduce risks, and create more value for our clients. It's an exciting time to be in project management." and that "The adoption of AI in project management is no longer a question of 'if,' but rather 'when.' We need to be proactive in our approach and embrace this change to stay ahead of the curve.”.

## 4.1 Summary of findings

The implementation of AI in project management has the potential to transform the field, providing unprecedented efficiency, accuracy, and automation. However, the implementation of AI also raises important questions about the potential impact on working personnel. This thesis has explored the potential benefits and challenges associated with AI implementation in project management and the potential impact on working personnel. The results of the study provided valuable insights into the potential effects of AI implementation in project management and will inform future research in this area. Ultimately, the successful implementation of AI in project management will depend on organizations' ability to effectively balance the potential benefits of AI with the risks and challenges associated with its adoption.

Advantage such as the ability to analyse large data sets quickly and accurately, the facilitation of communication and collaboration between team members, will require significant



investment in technology and personnel. The need for technical expertise will be more crucial than ever.

The implementation of AI in project management has the potential to significantly improve project outcomes, streamline communication, and increase a project's efficiency. However, there are also risks and challenges associated with AI implementation, such as data privacy concerns, potential bias in algorithms, and the need for technical expertise. Organizations must carefully consider these factors before implementing AI systems and invest in training and development for their employees to ensure successful adoption. Ultimately, the successful implementation of AI in project management will depend on organizations' ability to effectively balance the possible benefits of AI with the threats associated with its adoption.

In summary, it is believed that AI will assist, not replace, project managers. As with every technology, AI alone will not guarantee success. However, deployed purposefully, AI can be a distinctive accelerator and game changer for project managers and thus help increase project success rates. The project managers who succeed will likely be those who manage to see beyond the bounds of 'human' imagination, and answer questions about how this technology can add real value and drive positive change in project management and business transformations. This will ensure the strategic value of project management.

The future of project management will be heavily influenced by technological breakthroughs, and there is no doubt that AI will change the course of how project management tasks are delivered and controlled in the future. It is inevitable that AI will evolve from simple task automation to predictive project analytics, advice and actions. However, despite the enormous potential and the numerous advantages AI cannot solely substitute for the human presence and element which is still highly appreciated and needed. Over the years AI has been associated with different terms ranging from cognitive computing and machine learning to natural language processing. What they all have in common is the idea that machines could one day learn by themselves, rather than having to be provided every instruction or merely acting in accordance with a pre-programmed rule set. Today the term AI is often used interchangeably with 'automation'. There is, however, a huge difference: automation is a controlled process that follows pre-programmed logic and rules, while AI is designed to simulate intelligent and even human thinking. To date, a lot of the focus has been on automation – requiring a certain degree of standardisation – of tasks that are already carried out. However, this is considered as only the first phase in the evolution of AI in project management. This first phase will be



followed by chatbot project assistants, machine learning-based project management and, finally, autonomous project management.

Given the fact that respondents identified several concerns associated with AI adoption in project management, including data security, bias, ethical concerns, lack of transparency, human error, and resistance to change. These risks highlight the need for careful implementation, addressing biases, ensuring transparency and accountability, and maintaining the role of human judgment.



## 5. Discussion

Based on the aforementioned literature review provided above, in Chapter 2, it is evident that Artificial Intelligence has the potential to bring significant changes to the field of project management and the outcomes of this thesis are similar.

The literature suggests that AI can revolutionize various aspects of project management, including production, manufacturing, and delivery processes. It is widely acknowledged that AI is being implemented in numerous industries, ranging from manufacturing to financial services, indicating its widespread adoption and transformative impact. Regarding the role and the responsibilities of a project management position respondents pointed out that successful implementation of project management requires project planning, risk management, and resource allocation as was also mentioned in (Kerzner, 2017). Moreover, it was suggested that in the future we should focus on more effective project management practices as also mentioned in literature (Thomsett, 2021). As regard as the familiarity of projects managers with AI several ways of integrating AI in project management were referred, such as analyzing customer data, identifying potential risks and opportunities and automating routine tasks, as were also noted in (Barron & Barron, 2020) and (Hayek and Hajj, 2022).

However, similar to previous technological revolutions, there are obstacles that need to be overcome before fully realizing the potential benefits of AI in project management. The literature emphasizes the need to understand how AI can reshape project management practices, identify the challenges and barriers associated with its implementation, and prepare project managers to adapt to a future where AI is integrated, automated, and predictive. During the interviews of this thesis, project managers, expressed their concerns about loss of jobs as also mentioned in (Geraldi et al. (2020)) as well as concerns about reliability and personal data privacy issues as referred to (Liu et al. 2021).

When it comes to the impact of AI implementation in project management role, its essential contribution to decision making, risk assessment as well as to building an effective marketing strategy were stressed by the interviewees in accordance with what was referred in (Li et al., 2021), (Leeflang et al., 2020), Seyedhosseini et al. (2021), Zheuying Zhang et al. (2021), Salah et al. (2022). The literature highlights specific ways in which AI can enhance project management practices and revolutionize various aspects of project management, including



production, manufacturing, and delivery processes (Russel & Novig, 2016). It is widely acknowledged that AI is being implemented in numerous industries, ranging from manufacturing to financial services, indicating its widespread adoption and transformative impact. AI-powered systems have the potential to improve project scheduling and budgeting by leveraging data analysis to predict costs and timelines more accurately. Additionally, AI tools can provide valuable insights by analyzing data from current and past projects, enabling project managers to make informed decisions based on data-driven recommendations.

The literature also highlights specific ways in which AI can enhance project management practices. AI-powered systems have the potential to improve project scheduling and budgeting by leveraging data analysis to predict costs and timelines more accurately. Additionally, AI tools can provide valuable insights by analysing data from current and past projects, enabling project managers to make informed decisions based on data-driven recommendations. The respondents, when they were asked about the way that AI will affect project management role also confirmed the aforementioned points of view by saying that AI can significantly help in the direction of the automation of processes such as data entry, scheduling, reporting, customer data analysis and market research. This automation can finally free up project managers' time for more strategic and complex aspects of a project.

Concerning the possibility of displacement of human workers in project management due to the integration of AI there was a conversion in respondents' opinion that the role of project managers will remain essential in navigating complex decisions and unexpected obstacles and project managers will increasingly be involved in implementing AI-focused projects although there are concerns about potential loss of jobs and the urgent need for project managers' upskilling. It was emphasized that project managers do not necessarily need to be AI experts but they should develop new skills in order to be able to understand AI projects which, of course, differ from typical IT projects. This understanding will enable project managers to effectively collaborate with AI experts and leverage AI technologies to optimize project outcomes. This point was also mentioned in literature (Al-Mashari, M., & Zairi, M. (2022)).

Regarding project managers' additional training on the field of implementation of AI both in literature (Li et al., 2021, Chen et al., 2022) and during the interviews it was mentioned that it should include thorough insights of AI technologies and tools and its various applications in order to be able to apply all these in every day project management. More over project managers





should be deeply aware about the global standard on AI ethics as clearly declared. Needless to say, that the need to be up- to- date with the latest challenges in AI and the development of change management skills are crucial factors for the success of AI integration. As expected, (Al Mashari, M., & Zairi, M. (2022)) during the interviews concerns were expressed about the potential risks related to AI adoption in PM basically with ethical and privacy and data protection issues. It was suggested that organizations should take into consideration these issues and take all the necessary measures to ensure the beneficial use of AI in project management with responsibility and transparency.

In the direction of the maximization of benefits of AI integration in project management and the improvement of project outcomes, interesting perspectives were analyzed focused on the need the targeted selection of AI tools, team communication and collaboration and continuous evaluation of the expected benefits as also described in Chen et al., 2022.

Last but not least, regarding the suggested measures in order to support the project personnel for a smoother adoption of AI in project management it was commonly expressed that project personnel should be fully supported during the integration of AI in project management by providing the relevant training and coaching, making clear their new roles and responsibilities based on transparent communication and team work and by providing a vision strongly connected with project goals achievement.

Since there are two different aspects on the research questions, the discussion will be divided into two main parts. The first will focus on the first part of the question regarding the implementation of AI on project and the second regarding the effect this implementation will have on the working personnel respectively, thus a complete and multi-sided perspective for the power shift will be created.

## 5.1 Implementation of AI

When it comes to integration and automation there is already a strong focus on streamlining and automating standardised project tasks through workflow integration and process automation. For instance, project budget updates within a database are directly integrated into the budget forecast report without any manual intervention. Project planning could also be made more robust by enabling auto-scheduling by means of programmed logic and rules, i.e., automatically tracking the progress and status of tasks performed by project team members and



alerting a project manager only for intervention in an exception-based scenario. Interaction between incident management tools and project planning tools could be enforced to highlight potential delays based on a high number of defects within certain workstreams.

The results of the case study verified the existent knowledge and further enhanced it, by providing information about the new skills that needed to be developed for the implementation of AI in project management. These may include understanding and interpreting AI-generated insights, working with AI-enabled tools and platforms, familiarity with data analysis, machine learning, natural language processing, data visualization, change management, and understanding the impact of AI on project timelines, budgets, and resources.

Comparing to the literature review, the significance of project managers having a solid understanding of AI technologies was highlighted. Different algorithms, machine learning techniques, and natural language processing, along with the effective collaboration with AI systems and the acknowledgement of their capabilities and the procedure of integration into existing project management software and workflows, were, amongst others, mentioned and contributed to research regarding the means for the implementation of AI.

The research, additionally, emphasized the need for project managers to continuously learn and stay updated with the latest advancements in AI and its applications in project management. The respondents agreed upon the usage of bots and assistants as it was mentioned in theory and they further explained that in current real-life cases this includes interaction between MS Project Online and Wunderlist for task creation and scheduling, as well as the usage of online templates and workflows. For example, Slack or MS SharePoint are used to reduce time and enhance quality of data and finally receive alerts and notifications when potential budgeting or scheduling issues are identified for the project.

Overall, it was concluded that in order to maximize the benefits of AI in project management while minimizing negative consequences there are specific steps that needs to be followed. Project managers need to excel in acquiring skills in change management to effectively lead and support the adoption of AI technologies, which may involve changes in processes, workflows, and team dynamics. They should establish clear lines of responsibility and define the roles and responsibilities of both AI systems and human decision-makers in project's milestone. It is highly important, as well, to select the right AI tools, and focus on ongoing monitoring and evaluation of AI's performance, data security measures, transparency and



accountability, involving stakeholders in decision-making, and effective communication and collaboration between AI systems and human team members.

The first part of the research question was, thank to both the theoretical background and the findings through the interview process, answered in a satisfying extent. Both the methods, through which implementation can occur, but also the impact this will have on daily work routine tasks of employees was analysed and there was provided a significant amount of information to the already existent knowledge. Theory provided the background regarding the means; however, practise provided the insight about the need for extensive training to achieve literacy on the AI field.

## 5.2 Effect on working personnel

While using AI in project management it is important to understand that PM covers various disciplines and is influenced by multiple exogenous factors. Based on the theoretical background, a project manager needs to master all of them to be successful. By contrast with intelligent agents that operate in a defined and stable environment, for example robots producing cars on a production line, given the nature of projects, and the social dynamic and uncertain environment within which a project has to be delivered, the project management environment is without doubt much more complex.

As stated initially, AI will undoubtedly change how projects are delivered and how project management as a practice will evolve. In the midst of this evolution, it is important to remember that AI is not able, so far, to embody completely all the skills and requirements of a managerial position. This means that project managers will also stay relevant in the age of AI if they focus on the core skills of project management and progressively move into work that emphasises on coaching and team leading. These skills include leadership, people and stakeholder management knowledge, communication and negotiation skills, storytelling, empathy and high emotional intelligence. This will remain, for the foreseeable future, in the domain of humans.

Given the different fields that were analysed above, the potential for implementation of Artificial Intelligence in Project Management is apparent and can be achieved in various ways to streamline the process, enhance efficiency and drive business growth.

While AI can bring many benefits to project management, it can also present challenges for working personnel. First and more significant are the trust issues that can arise. Some personnel may be reluctant to trust AI tools and technologies, and may prefer to rely on their



own judgment and experience. Based on, both theory and interviews, it was proven that this was the main obstacle and struggle of employees regarding the implementation of AI in their work field.

Respondents had varied opinions on whether AI would lead to the displacement of human workers in project management. Some believed that while routine tasks may be automated, project managers would still be needed for complex tasks, strategy development, stakeholder management, and human judgment. Others acknowledged that certain roles, such as data analysis and reporting, may be displaced, but new opportunities would also be created. Therefore, it is important to consider both the potential job losses and new job opportunities when implementing AI in project management.

Simultaneously, there was the fear of being left out. They could potentially, feel like they could neither participate nor comment on how AI is used in their workplace, and that decisions about AI are made by management without their input. To tackle this, there is a necessity for the existence of a learning curve for personnel to adapt to new AI tools and technologies, so they may need to undergo training and development to get familiar with new software and systems.

Furthermore, it was stressed that AI systems can perpetuate bias and discrimination if they are not designed and implemented carefully under a smooth transition environment. Workers potentially could worry that they will be negatively impacted by biased AI systems. They, as well, might feel incompetent and that they lack the training and skills necessary to work effectively with AI systems, which could make them feel inadequate or threatened in their jobs. Another aspect would emerge from AI systems' frequent reliance on large amounts of data, which can raise concerns about privacy and data security. Employees may worry that their personal information is being used in ways that they did not consent to. They can present ethical concerns and considerations, based on the belief that optimisation of profits is at the expense of their human welfare and goes against the company's values and mission.

To support project personnel in adapting to AI implementation, measures suggested include offering training and development programs, promoting collaboration and knowledge sharing, addressing concerns through change management, providing clear roles and responsibilities, educating team members about AI capabilities and limitations, and ensuring clear and transparent communication about the implementation and impact of AI in project management. Respondents emphasized the need for reliability, security, compliance with regulations and ethical standards, ongoing skills development, transparency with clients and stakeholders, and



a collaborative approach involving project managers, data scientists, software developers, and other key stakeholders.

Overall, it is important for companies to address these concerns and communicate openly with employees about the ways in which AI is being used in the workplace. This can help to build trust and ensure that AI is used in a way that benefits both the company and its employees.

The second aspect of the research question, was as well answered in an extent. However, here another interesting aspect was developed. While many of the assumptions, steaming from theory and common knowledge, were satisfied, there was a shift towards their main concern. Ethical considerations and privacy issues were out of the most importance for most of the project managers, instead of the anticipate anxiety for potential job displacement. Unexpectedly, based on the research assumption, the interviewees deeply understood that despite the potential for jobs losses, there is significant area for new opportunities. Thus, the findings for the second research questions completed partially the focus of this thesis, but simultaneously created a new motivation section to be taken into consideration in future researches.



## 6. Conclusion

The implementation of Artificial Intelligence (AI) in project management holds great potential for improving efficiency and enhancing project outcomes. However, it is crucial to consider the impact on the working personnel and address the ethical considerations associated with AI adoption. This thesis project has provided valuable insights into the effect of AI on employees and highlighted the importance of addressing ethical concerns.

Through a literature review and semi-structured interviews with project managers from Greece and Sweden, it was evident that AI adoption requires additional training and skillsets for project managers. The interviews revealed that project managers had mixed thoughts about AI implementation, with some expressing concerns about job safety and the need for upskilling. These second thoughts underline the importance of effective change management and providing support to employees during the transition.

Moreover, ethical considerations emerged as a crucial aspect of AI implementation in project management. Privacy, fairness, transparency, accountability, and human oversight were identified as key ethical considerations. Organizations must ensure that AI is used ethically and responsibly, respecting privacy rights and ensuring fairness in decision-making processes. Human oversight and accountability mechanisms should be in place to prevent potential biases or unintended consequences.

To effectively implement AI in project management, organizations should consider a phased approach. This includes conducting a thorough assessment of the organization's readiness for AI adoption, providing adequate training and support to project managers and team members, and creating a culture that embraces AI while maintaining a human-centric approach. Collaboration between AI systems and human workers should be fostered, with AI serving as a supportive tool rather than replacing human decision-making.

In conclusion, the implementation of AI in project management offers numerous benefits but requires careful consideration of its impact on the working personnel. By addressing the ethical considerations and providing necessary support to employees, organizations can harness the power of AI while ensuring a smooth transition and positive outcomes. It is crucial for organizations to adopt AI in project management in a way that maximizes benefits, minimizes negative consequences, and upholds ethical standards, ultimately leading to improved project performance and overall organizational success.



The power shift resulting from AI implementation presents both opportunities and challenges for project management. Ultimately, by harnessing the power of AI while recognizing the continued importance of human expertise, project management can leverage technological advancements to drive positive change, improve project success rates, and ensure the strategic value of project management in an increasingly AI-driven future.

## 6.1 Implication of Practise and Theory

The literature review and interviews conducted in this study provide valuable insights into the implications of integrating AI in project management. These implications can guide organizations and project managers in effectively adopting and leveraging AI technologies. Here are the key implications for practice:

- **Embrace AI-enabled automation:** Organizations should embrace the automation capabilities offered by AI technologies. Project managers can benefit from automating routine tasks such as data entry, scheduling, and reporting. By offloading these repetitive tasks to AI systems, project managers can focus on more strategic and complex aspects of project management.
- **Foster collaboration between project managers and AI experts:** Project managers do not need to become AI experts themselves, but they should develop a strong understanding of AI technologies and their applications in project management. This understanding enables effective collaboration between project managers and AI experts, fostering synergy and optimizing project outcomes.
- **Invest in AI training and upskilling:** Organizations should provide project managers with comprehensive training on AI technologies, tools, and their various applications. This training should go beyond superficial knowledge and provide project managers with deep insights into AI to facilitate informed decision-making. Additionally, project managers should stay up-to-date with the latest developments and challenges in AI through continuous learning.
- **Address ethical and privacy concerns:** With the integration of AI in project management, organizations must prioritize ethical considerations and data privacy protection. It is crucial to establish global standards for AI ethics and ensure responsible and transparent use of AI technologies. Organizations should take necessary measures to mitigate potential risks and safeguard sensitive information throughout the AI adoption process.



- **Select AI tools strategically:** Organizations should carefully select AI tools that align with their project management needs and objectives. The targeted selection of AI tools can maximize the benefits of AI integration, enhance project scheduling and budgeting accuracy, and provide valuable insights for data-driven decision-making.
- **Promote effective team communication and collaboration:** AI integration in project management should not undermine the importance of human interaction and collaboration. Organizations should promote effective team communication and collaboration to ensure that project personnel can adapt to the changes brought by AI. Transparent communication and clear articulation of new roles and responsibilities will help project teams work cohesively towards project goals.
- **Continuously evaluate benefits and adapt:** Regular evaluation of the expected benefits of AI integration is essential. Organizations should establish mechanisms to assess the impact of AI technologies on project management practices and outcomes. This evaluation process allows for fine-tuning and adaptation, ensuring that AI implementation remains aligned with the organization's goals and objectives.

In conclusion, the integration of AI in project management holds tremendous potential for revolutionizing project practices and outcomes. However, successful implementation requires organizations to address challenges related to job displacement, ethical concerns, and data privacy. By embracing automation, fostering collaboration, providing AI training, addressing ethical considerations, strategically selecting AI tools, promoting effective communication, and continuously evaluating benefits, organizations can harness the power of AI and enable project managers to thrive in an AI-driven future.

## 6.2 Limitations of the Study

This section will discuss the limitations of the study, including the sample size and the potential biases in the data collection and analysis.

Several limitations were actually witnessed in the actual research that potentially had an impact on the outcomes and the findings. More specifically:

- **Limited sample size:** The study had a small number of participants due to practical constraints. This limited sample size can have potentially affected the generalizability of the findings to a broader population. The opinions and perspectives gathered may





not represent the diversity of viewpoints that exist within the larger population, potentially leading to biased or incomplete conclusions.

- **Selection bias:** Since the interviewees were approached and selected based on a limited network, there is a possibility of selection bias. This means that the participants may share similar backgrounds, experiences, or viewpoints, which can limit the diversity of perspectives and potentially introduce a bias in the findings.
- **Reliability and validity of data:** Some of the data collected in the study may rely on outdated secondary sources. The use of outdated secondary sources may not reflect the most current understanding of the topic, especially in a rapidly evolving field like artificial intelligence.
- **Limited timeframe:** The study's timeframe was constrained, both due to time and budget limitations. This restricted the ability to collect data over a longer period, limiting the depth and comprehensiveness of the findings. Artificial intelligence is a complex and evolving field, and a short timeframe may not capture the full range of dynamics and developments in the field.
- **Contextual factors:** The respondents being from Greece and Sweden may introduce geographical and cultural biases, and the findings may not be applicable to other regions or countries with different socio-economic, political, or cultural contexts. Additionally, the data were analysed without the usage of a coding program such as NVivo or Dedoose, which focuses on the qualitative analysis of interviews. This automatically generates a higher possibility for human error in the results.

Overall, these limitations suggest that the research findings should be interpreted with caution and may not be fully representative or generalizable to a broader population or different contexts. Further research with a larger and more diverse sample, using a variety of data collection methods and considering a longer timeframe, would be beneficial to mitigate these limitations and provide a more comprehensive understanding of the topic.

### 6.3 Suggestions for Future Research

In this section suggestions for future research will be provided based on the requirements and gaps on literature that were indicated through this thesis research. More specifically:

- **Conduction of longitudinal studies** to assess the long-term impact of AI implementation on the working personnel in project management. This would involve tracking changes



in job roles, skill requirements, job satisfaction, and well-being over an extended period of time to understand the evolving effects of AI on employees.

- Investigation of the user experience and acceptance of AI systems among project managers and team members. Explore factors influencing their perception, attitudes, and willingness to adopt AI technologies in their work, as well as the barriers and facilitators to successful implementation.
- Examination of the dynamics of human-AI collaboration in project management. Explore how project managers and team members interact with AI systems, how trust and reliance on AI technologies develop, and the impact on decision-making processes and overall project outcomes.
- Investigation of the specific skill requirements and training needs for project managers and team members in the context of AI implementation. Identify the essential skills and competencies for working effectively with AI technologies, and develop training programs to bridge the skills gap and support workforce development.
- Exploration of effective change management strategies for implementing AI in project management while considering the impact on the working personnel. Investigate approaches to address resistance to change, promote employee engagement, and foster a positive organizational culture during the AI implementation process.
- Enhancement of the understanding of ethical implications associated with AI implementation in project management. Investigate ethical considerations related to data privacy, algorithmic bias, transparency, and accountability. Develop frameworks and guidelines to ensure ethical decision-making and responsible use of AI technologies.
- Assessment of the impact of AI implementation on employee well-being and job satisfaction in project management. Investigate how changes in job roles, work processes, and interactions with AI systems influence the overall work experience and job satisfaction of project managers and team members.
- Examination of organizational readiness for AI implementation in project management and its effects on the working personnel. Investigate factors such as leadership support, organizational culture, infrastructure readiness, and change readiness, and their influence on successful AI adoption and employee acceptance.
- Conduction of comparative studies to compare different approaches and models of AI implementation in project management. Compare the effects on the working personnel



across industries, organizational sizes, and project types to identify contextual factors that influence the outcomes of AI adoption.

These future research suggestions aim to advance our understanding of the implementation of AI in project management with a focus on its effects on the working personnel. By exploring these areas, researchers can contribute to the development of effective strategies, guidelines, and frameworks that maximize the benefits of AI while addressing the concerns and ensuring the well-being of the workforce.



## 7. References

- Aaltonen, K., & Kujala, J. (2010). A project lifecycle perspective on stakeholder influence strategies in global projects. *International Journal of Project Management*, 28(1), 7-17.
- Abdullah, R., Yusof, R. B., & Abidin, N. Z. (2016). Artificial intelligence in project management: An exploratory study. *International Journal of Information Technology Project Management*, 7(4), 1-15.
- Abdulrahman, A. (2021). Artificial intelligence in project management: A scoping review. *International Journal of Advanced Science and Technology*, 30(4), 569-582.
- Adair, J. G., & Vohra, N. (2003). The Hawthorne effect: Generalizable or ephemeral phenomenon? *Journal of Business and Psychology*, 17(3), 283-297. doi:10.1023/A:1022830305913
- Alimohammadi, D., & Mousavi, S. M. (2019). An overview of the role of artificial intelligence in project management. *International Journal of Human Capital Management*, 3(1), 1-13.
- Al-Mashari, M., & Zairi, M. (2022). Understanding the factors that influence the adoption of artificial intelligence in project management. *Journal of Business Research*, 145, 471-482.
- Alqahtani, A. M., Khan, M. M., & Alamri, A. (2020). Artificial intelligence in project management: Trends, challenges, and opportunities. *International Journal of Advanced Computer Science and Applications*, 11(6), 199-204.
- Amiri, M., & Zare Ravasan, A. (2017). The impact of artificial intelligence on project management. *International Journal of Engineering Research and Development*, 13(11), 08-13.
- Anbari, F. T., & Khilkanova, E. V. (2017). Project management talent management: Framework, metrics, and roadmap. *Project Management Journal*, 48(6), 36-54.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.
- Bannerman, P. L., & Lee-Kelley, L. (2018). Artificial intelligence and project management: A game changer for the project management profession?. *International Journal of Project Management*, 36(1), 54-65.
- Bani-Melhem, S., & Al-Ayyoub, M. (2017). The role of artificial intelligence in project management: Theory, practice, and prospects. *International Journal of Computer Applications*, 168(3), 1-7.
- Barron, R., & Barron, A. (2020). Artificial Intelligence in Project Management. In *The Palgrave Handbook of Managing in a Digital World* (pp. 207-232). Palgrave Macmillan.
- Baskerville, R. L., & Pries-Heje, J. (2018). The practice of enterprise architecture: A qualitative study of practitioner approaches. *Journal of Enterprise Architecture*, 14(1), 38-47.
- Belharet, A., Bharathan, U., Dzingina, B., Madhavan, N., Mathur, C., Toti, Y.D.B., Babbar, D. and Markowski, K., 2020. A Study on the Impact of Artificial Intelligence on Project Management (No. 8mxfk). Center for Open Science.
- Brinkmann, S. (2014). Interview. In *Encyclopedia of Critical Psychology* (pp. 954-958). Springer. doi:10.1007/978-1-4614-5583-7\_187



- Boh, W. F., & Yellin, D. M. (2019). Artificial intelligence and the future of work: Human-AI collaboration in organizational decision making. *Business Horizons*, 62(1), 1-11.
- Brzeziński, D., & Głowacz, A. (2021). Artificial intelligence in project management and its impact on project team members. In *Proceedings of the 16th International Conference on Artificial Intelligence Applications and Innovations (AIAI 2020)* (pp. 109-119). Springer.
- Bucero, A., & Englund, R. L. (2006). Grow project managers through work environments: A competency model. *Project Management Journal*, 37(4), 38-48.
- Burke, R. (2019). *Project management leadership: Building creative teams* (4th ed.). Wiley.
- Cao, L., & Zhang, Y. (2020). Artificial intelligence in project management: A systematic literature review. *Engineering, Construction and Architectural Management*, 27(5), 1263-1283.
- Carneiro, J., Branco, F., Almeida, J., & Gomes, L. (2021). Artificial Intelligence in Project Management: A Bibliometric Study. *Procedia Computer Science*, 181, 158-165.
- Crawford, L., Hobbs, B., & Turner, J. R. (2020). Project management in the age of AI, big data, and machine learning. *International Journal of Project Management*, 38(8), 437-446.
- Chen, S. C., & Hung, S. Y. (2010). To give or to receive? Factors influencing members' knowledge sharing and community promotion in professional virtual communities. *Information & Management*, 47(4), 226-236.
- Chen, S. C., Liu, J. Y., & Yen, D. C. (2011). An exploratory study of the interplay between organizational culture and enterprise system implementation. *Journal of Enterprise Information Management*, 24(3), 223-242.
- Clegg, S., & Barker, R. (2014). Case study research. In M. Buchanan & A. Bryman (Eds.), *The SAGE handbook of organizational research methods* (pp. 423-435). SAGE Publications.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches*. (4th ed.). Sage Publications.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world: Don't start with moon shots. *Harvard Business Review*, 96(1), 108-116.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, K., & Olson, K. (2012). Questionnaire design. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and Understanding Multivariate Statistics* (pp. 335-375). American Psychological Association.
- Dhanda, K., Kansal, M., & Bedi, P. (2021). Artificial Intelligence in Project Management: A Bibliometric Analysis. In *Proceedings of the 2021 International Conference on Advances in Computing and Data Sciences* (pp. 1049-1054).
- Dikmen, I., Birgonul, M. T., & Isikdag, U. (2018). The role of artificial intelligence in construction industry: A review of recently published literature. *Automation in Construction*, 89, 1-13.



Egbu, C., Hari, S., & Kumar, B. (2016). Knowledge management in project-based organisations: The success criteria and best practices. *Journal of Knowledge Management*, 20(5), 958-974.

Fernandes, G., Peixoto, F., Rodrigues, M., & Lopes, N. (2020). Use of Artificial Intelligence to support project management. *Procedia Computer Science*, 176, 2302-2311.

Fogg, B. J. (2003). *Persuasive technology: Using computers to change what we think and do*. Morgan Kaufmann.

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report*, 20(9), 1408-1416.

García-Sánchez, A., García-Fernández, R., & Martínez-Sánchez, Á. (2018). Artificial intelligence in project management: Opportunities, challenges, and risks. *Journal of Industrial Engineering and Management*, 11(2), 335-358.

Geraldi, J. G., Møller, M., & Söderlund, J. (2020). Artificial intelligence in project management: Opportunities, challenges, and implications for theory and practice. *International Journal of Project Management*, 38(2), 160-174.

Geraldi, J., Lechter, T., & Williams, T. (2020). Artificial Intelligence in Projects: Current Practices and Future Prospects. *Project Management Journal*, 51(1), 10-15.

Geraldi, J., Lechter, T., & Williams, T. (2020). Artificial Intelligence in Projects: Current Practices and Future Prospects. *Project Management Journal*, 51(1), 10-15.

Greaves, C. J., Sheppard, K. E., Abraham, C., Hardeman, W., Roden, M., Evans, P. H., & Schwarz, P. (2011). Systematic review of reviews of intervention components associated with increased effectiveness in dietary and physical activity interventions. *BMC Public Health*, 11(1), 119.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. Available at: <https://doi.org/10.1108/EBR-11-2018-0203>. (Accessed at: 30 April 2023)

Hakimian, F., & Khalili-Damghani, K. (2019). An overview of artificial intelligence applications in project management. *Journal of Construction Engineering and Management*, 145(6), 04019033.

Hayek, Y., & Hajj, R. (2022). The integration of artificial intelligence in project management: A review of the literature. *Journal of Artificial Intelligence and Soft Computing Research*, 12(1), 1-15.



- Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2017). *Strategic management: Concepts and cases: Competitiveness and globalization* (12th ed.). Cengage Learning.
- 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 at 16 May 2023. Available at: <https://doi.org/10.1177/87569728211047067>
- Hone, K. S., El Said, G. R., & Mahmoud, E. M. (2015). Designing and implementing an e-learning system in a university context: A stakeholder analysis. *Interactive Learning Environments*, 23(1), 26-44.
- Jiang, J. J., Guo, R., & Zhang, K. Z. K. (2021). How can artificial intelligence benefit project management? *Journal of Business Research*, 131, 442-453.
- Jin, Y., Li, L., & Chen, X. (2021). Analysis of artificial intelligence development in project management: a knowledge domain visualization. *International Journal of Environmental Research and Public Health*, 18(5), 2536.
- Johnson, B., & Christensen, L. (2019). *Educational research: Quantitative, qualitative, and mixed approaches* (7th ed.). SAGE Publications.
- Johnson, R. (2019). Data Sources and Research Validity in Secondary Data Analysis. *Social Science Quarterly*, 100(3), 839-857.
- Jones, L. (2020). Survey Questionnaire Design: Guidelines for Quality Data Collection. *Journal of Survey Methodology*, 25(2), 123-145.
- Kaewprakaisang, N., & Thanasankit, T. (2021). The application of artificial intelligence in project management: A literature review. *International Journal of Innovation, Management and Technology*, 12(3), 136-142.
- Karimi, J., Somers, T. M., & Bhattacharjee, A. (2007). The role of information system characteristics in IT infrastructure outsourcing decisions: An empirical analysis. *Journal of Information Technology*, 22(2), 145-158.
- Karjaluoto, H., Tarkiainen, A., & Saarijärvi, H. (2015). Mobile banking in Finland: A review of the literature. *Telematics and Informatics*, 32(1), 15-25.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. *The Public Opinion Quarterly*, 38(4), 618-637.
- 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.
- Kerzner, H. (2017). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (12th ed.). Wiley.
- Kerzner, H. (2020). *Innovation Project Management: Methods, Case Studies, and Tools for Managing Innovation Projects*. Wiley.





- Kerzner, H. (2021). *Project Management 3.0: New Skills and Knowledge for Complex Project Environments*. Wiley.
- Kujala, S., Walsh, T., & Lahteenmaki, J. (2014). Evaluating user experience of health and wellness apps. *Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational*, 321-330.
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing*. Sage.
- Kwon, T. H., & Zmud, R. W. (1987). Unifying the fragmented models of information systems implementation. *Critical Issues in Information Systems Research*, 227-251.
- Lee, S. Y. T., Kotler, P., & editors. (2014). *Social marketing: Influencing behaviors for good*. Sage Publications.
- Leeftang, P. S., Verhoef, P. C., Dahlström, P., & Freundt, T. (2020). Challenges and solutions for marketing in a digital era. *European Management Journal*, 38(1), 1-4.
- Liao, Y., Luo, L., Lin, W., & Luo, X. (2020). Artificial intelligence in project management: A bibliometric analysis. *Sustainability*, 12(21), 8899.
- 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.
- Li, Y., Zhang, H., Ding, J., & Yu, Z. (2021). Research on artificial intelligence application in project management based on CiteSpace
- Lim, C., & Mohamed, M. (2017). A review of artificial intelligence applications in project management. *Journal of Engineering, Design, and Technology*, 15(3), 344-367.
- Liu, Y., Huo, Y., & Wu, Z. (2021). Exploring the use of artificial intelligence in project management: An empirical study. *International Journal of Project Management*, 39(1), 212-226.
- Lluch, M. (2011). Healthcare professionals' organizational barriers to health information technologies - a literature review. *International Journal of Medical Informatics*, 80(12), 849-862.
- Maier, A., Moultrie, J., & Clarkson, P. J. (2020). *The future of design and manufacturing*. Cambridge University Press.
- Marks, M. L., & Mirvis, P. H. (2011). Merge ahead: M&A culture clash. *Journal of Business Strategy*, 32(1), 17-24.
- Mick, S.L., & Fournier, S. (1998). Paradoxes of technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research*, 25(2), 123-143.
- Mishra, P., & Mishra, A. (2018). An empirical study on task-technology fit of social media in the context of Indian manufacturing sector. *Journal of Manufacturing Technology Management*, 29(3), 518-533.
- Moorthy, A. K., & Ghani, A. A. A. (2020). The role of project managers in artificial intelligence and automation implementation. In *Proceedings of the 5th International Conference on Applied Engineering* (pp. 82-88). Atlantis Press.





- Musa, S., Sharma, R. R. K., & Pant, R. (2020). Artificial intelligence in project management: A bibliometric analysis. *Computers & Industrial Engineering*, 150, 106923.
- Niederman, F. (2021). Project management: Openings for disruption from AI and advanced analytics. *Information Technology & People*.
- Nielsen, J. (1994). Enhancing the explanatory power of usability heuristics. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 152-158.
- Nividous. (n.d.). Robotic Process Automation (RPA) - Automate your business processes. Retrieved from <https://nividous.com/automation/rpa>].
- 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.
- Norman, D. A. (1999). Affordance, conventions, and design. *Interactions*, 6(3), 38-43.
- OrangeScrum. (n.d.). Introduction to project management: Project management life cycle. OrangeScrum. Retrieved from <https://www.oraangescrum.com/tutorial/introduction-to-project-management/project-management-life-cycle> (Accessed 5 May 2023).
- Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2015). Social cognitive theories used to explain physical activity behavior in adolescents: A systematic review and meta-analysis. *Preventive Medicine*, 76, 56-67.
- PMI. (2019). Implications of AI. *PM Network Digital Exclusives*. Retrieved from <https://www.pmi.org/learning/publications/pm-network/digital-exclusives/implications-of-ai> (Accessed: 25 February 2023).
- PMI. (2019). The PMI Talent Triangle®: A guide to understanding and implementing the PMI Talent Triangle®. Retrieved from <https://www.pmi.org/learning/library/pm-talent-triangle-guide-10623> (Accessed: 15 March 2023)
- Poon, E. G., Jha, A. K., Christino, M., Honour, M. M., Fernandopulle, R., Middleton, B., & Bates, D. W. (2010). Assessing the level of healthcare information technology adoption in the United States: A snapshot. *BMC Medical Informatics and Decision Making*, 10(1), 1-12.
- PricewaterhouseCoopers. (2018). AI will transform project management. Are you ready? PwC. Retrieved from <https://www.pwc.ch/en/insights/risk/ai-will-transform-project-management-are-you-ready.html> (Accessed: 10 March 2023).
- Project-Management.com. (2021, January 19). The Future of AI and Project Management. Retrieved from <https://project-management.com/the-future-of-ai-and-project-management/> (Accessed: 25 February 2023).
- Project-Management.com. (2019, October 23). The Future of AI and Project Management. Retrieved from <https://project-management.com/the-future-of-ai-and-project-management/> (Accessed: 25 February 2023).
- Project Management Institute. (2017). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (6th ed.)*. Project Management Institute.
- Project Management Institute (PMI). (2017). PMI Talent Triangle®. Retrieved from <https://www.pmi.org/certifications/talent-triangle>



- PwC Switzerland. (2019). AI will transform project management. Retrieved from: <https://www.pwc.ch/en/publications/2019/ai-will-transform-project-management-en2019-web.pdf> (Accessed: 25 February 2023).
- Quantellia. (n.d.). Agile AI. Available at: [quantellia.com/agile-ai/](https://quantellia.com/agile-ai/) (Accessed at 17 May 2023)
- Rogers, E. M. (1995). *Diffusion of innovations*. Simon and Schuster.
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2(4), 328-335.
- Russell, S., & Norvig, P. (2016). *Artificial Intelligence: A Modern Approach* (3rd ed.). Pearson.
- Salah, A., Farrokhi, H., & Azadnia, A. H. (2022). Artificial intelligence for project management: A systematic review and future research directions. *International Journal of Project Management*, 40, 83-97.
- Salam, M., Wahab, E., & Sulaiman, M. (2018). Investigating the project manager competencies: Identifying the gaps in the talent triangle. *International Journal of Engineering and Technology(UAE)*, 7(4.6), 196-199.
- Seidman, I. (2013). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (4th ed.). Teachers College Press.
- Syedhosseini, S. M., Asadzadeh, S. M., & Rahimi-Kian, A. (2021). Project risk assessment using machine learning algorithms: A review. *International Journal of Project Management*, 39(1), 195-211.
- Smith, J. (2018). Ethical Considerations in Confidentiality Agreements: A Case Study Analysis. *Journal of Business Ethics*, 95(4), 541-553.
- Schwalbe, K. (2020). *Information Technology Project Management* (9th ed.). Cengage Learning.
- 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.
- Tilson, D., Lyytinen, K., & Sørensen, C. (2010). Research commentary—digital infrastructures: The missing IS research agenda. *Information Systems Research*, 21(4), 748-759.
- Thomsett, R. (2021). Using artificial intelligence for project management: Assessing organizational readiness. *Project Management Journal*, 52(2), 186-200.
- United Nations. (2015). *Sustainable Development Goals*. Retrieved from <https://sdgs.un.org/goals> (Accessed: 3 May 2023).
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Wu, J., Huang, Y., Liang, X., Li, J., & Wang, X. (2020). The acceptance of telemedicine during COVID-19 pandemic: An empirical study based on the technology acceptance model. *Journal of Medical Systems*, 44(9), 1-10.



Zayed, T., Bakhoun, E., Abou-Zeid, A., & El-Enein, M. A. (2021). Artificial intelligence in project management: A systematic review. *International Journal of Information Management*, 57, 102335.

Zhang, Z., Khan, M. U., & Ahmed, A. (2021). The role of artificial intelligence in project management: Opportunities and challenges. *Sustainability*, 13(15), 8307.

Zuppo, C. M. (2018). Artificial intelligence applications in project management. *International Journal of Scientific Research and Management*, 6(9), 455-460.