

ARTIFICIAL INTELLIGENCE IN ENTERPRISE DIGITALIZATION -
PROJECT MANAGEMENT IN CORPORATE

by

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DISSERTATION

Presented to the Swiss School of Business and Management Geneva

In Partial Fulfillment

Of the Requirements

For the Degree

DOCTOR OF BUSINESS ADMINISTRATION

SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

<MONTH OF GRADUATION, YEAR>

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To my family who stood beside me as a pillar during the entire journey on all ups and downs and made me to taste the sweetness of success through all struggles.

Acknowledgements

Thanks to DR. Kamal Malik for continuous support, guidance during the entire research process. To my managers from my previous and current organization who gave me the opportunity to understand and work on project management which gave me the idea to do research in AI enabled project management.

ABSTRACT
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Project Management usually involves many methodologies, among which the most commonly used are Kanban, Waterfall, and Agile. These approaches involve planning, organizing, resource management, and task tracking to meet project deadlines and goals. The project managers need to play a vital role in all these activities, which consume managers' bandwidth. There are tools used to track these processes, but these further involve managers' manual efforts. Additionally, project managers need to make a note of the team's capacity on a sprint basis. All the PBIs need to be managed manually for the estimation, capacity of work, and completion of work, which again involves manual effort. If there is any drop in project management, then the delivery would be delayed, and the deadline would be missed off which means project management plays a key role in all organizations across all projects.

The Burndown chart in the tracking process helps to make sure that the progress is on track and there is no deviation from meeting the goals on time, which also requires

manual efforts from project managers. The chart shows the hours burnt by each resource across the board and also the entire team's efforts burnt. But, still few of the PBIs are not completed within the sprint and get carried forward, which is due to a lack of data collection, documents, quality of work involved, time time-consuming. To overcome all these, organizations started using Artificial Intelligence in project management. AI has proven to be superior to human decision-making in certain areas. Artificial Intelligence is better than humans at finding and enacting the best policies in certain areas concerning science, engineering, and complex societal macro-economic issues.

The thesis shows the integration of project management with an AI-enabled project management tool and also the training framework to train employees on AI in project management. The data is collected from various participants on how traditional project management happens, what the drawbacks are, and areas it has failed through a survey. The research work elaborates on the use of Artificial Intelligence in project management with information from a survey that was collected from project managers or resources working with AI in project management. The data is also collected using a literature review approach and performing a comparative analysis. The thesis uses a hybrid model approach along with agile methodology, which improves the delivery and avoids the tasks being carried forward further. The Top-Down model sets clear goals, budgets, and timelines with AI to ensure these goals are aligned with organizational objectives, predict potential risk, and identify resource allocation gaps. While the Bottom-up model allows the team in decision-making that supports accuracy, estimations, real-time performance, and also communication with the management. During the planning, all the documents need to be uploaded to the board, which is accessible to everyone. Each document needs to be updated with the full details required to complete the task within the sprint. It needs to be ensured that there is no requirement gap left behind, which is a major cause for the task to be carried

forward to the next sprint. The estimation for each task is done based on the previous sprint data using Artificial Intelligence, which will avoid wrong estimations. The stakeholders need to be communicated in prior with the full demo of the new functionalities, which in turn will avoid re-work and hence the time is saved. The Artificial Intelligence-enabled project management tool will provide automatic tracking of the efforts, status change of the task, and send us a notification via email for better planning, for which managers need to be well-trained in using the Artificial Intelligence-enabled project management tool. Resources are not familiar with Artificial Intelligence and would need to be trained accordingly. All the task needs to be updated with details, which will be useful when there is a need to get the summary of the associated task as well. The responses from the survey show that AI-enabled project management is more efficient than manual project management, like Jira, Azure DevOps, etc., in many ways. The bugs need to be logged in a project management tool and should be associated with the corresponding task on the board. The bugs will be automatically tracked by an Artificial Intelligence-enabled project management tool. So, managers can just get the report of the bugs, which will reduce the manual effort spent on making notes of all the bugs associated.

In addition, if the resources are not aware of Artificial Intelligence, they need to be trained by organization by following ADDIE model with the 10-step framework mentioned as Identify Training Needs, Basic AI Concepts, Technical Skills Development, Data Literacy Training, Practical Application, Feedback and Support, Ethical and Responsible AI Use, Continuous Learning, Integration with Existing Workflows, Evaluation and Assessment. Based on the training provided, the resources will be able to gain more knowledge on Artificial Intelligence.

KeyWords: Artificial Intelligence in project management, Hybrid model in project management, Agile Methodology.

List of Abbreviations

AI - Artificial Intelligence

QA - Quality Assurance

PM - Project Management

LR - Literature Review

SLR - Structured Literature Review

PBI - Product Backlog Item

PO - Product Owner

IOT - Internet of Things

DL - Deep Learning

NLP - Neural Language Processing

SDLC - Software Development Lifecycle

STLC – Software Testing Lifecycle

GANs - Generative Adversarial Networks

VAEs - Variational Autoencoders

PLM - Product Lifecycle Management

GenAI - Generative Artificial Intelligence

LLM - Large Language Model

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses

QAI - Quantum AI

QC - Quantum Computing

QAOA - Quantum Approximate Optimization Algorithm

TDAMR - Tri-day agile with milestone reviews

LRP - Layer-wise relevance propagation

SHAP - Shapley additive explanations

CNN - Convolutional Neural Network

LLMs – Large Language Models

FMEA – Frame Mode Effect Analysis

CI/CD – Continuous Integration and Continuous Deployment

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CHAPTER I: INTRODUCTION

1.1 Introduction

The term project management is used to drive the activities required to complete the project and deliver the product to clients. Project managers spend most of their time managing activities rather than development, and are often piled up with meetings with leadership, top management, and stakeholders to provide project updates. The booming technology helps project managers in all these activities, thus speeding up the process. Traditional methods struggle to handle complex projects. Artificial Intelligence is rapidly transforming project management through advances in data analytics, decision-making, and task automation. There are tools like AI, intelligent automation, natural language processing, and generative AI to handle risk, stakeholder communication, scheduling, and risk management. AI is not only used for automation but also to maintain a collaborative project environment. Thus, enabling the shift to a proactive management from a reactive management. Generative AI, along with natural language interfaces, is used to automate task assignment, documentation, and reporting.(Adebowale, 2025).

Artificial Intelligence is used in resource allocation, decision making, and risk management, even with complex projects. It has been researched that decision-making is improved with the use of predictive analysis, and project trends are predicted using automated learning of machine algorithms (Abaneme et al., 2025). This will help the organization to reduce human-prone errors and also reduce the manual efforts for managers. Managers, as a result, contribute to other activities of product development. The implementation of AI in project management in corporations is redefining the workflow as it plays a significant role in many business developments. It changes the way of business interaction with customers, like the intelligent agent assistant (Li, 2023). This refers to the

term “digital transformation,” which means modifying the existing process or workflows, and it is a broad spectrum. Similarly, digitalization is also required across organizations to improve efficiency and productivity. Flexibility, delivery, and collaboration are improved using agile in project management. Traditional project management is difficult to handle complex projects. Decisions are made using AI with the integration of NLP, predictive analysis. Hybrid AI methodology with agile frameworks helps in continuous project monitoring and adaptation. Agile is in an iterative manner, which helps in scalability, risk management (Cloare, 2025).

As new technologies are evolving across the globe, this changes many manual processes involved and reduces human labour. Project managements are handled as a manual task by project managers, which takes much of the manager’s time. Artificial Intelligence analyzes the wide range of data from previous projects to identify patterns even in weather forecasts, supply chain logistics. Organizations need to consider ethical considerations when implementing Artificial Intelligence within projects (Otaabea Sefa and St John, 2024). Not only in software but also in e-commerce, web development sectors, and healthcare, AI has a huge impact on project management in scheduling tasks, risk management, and stakeholder communication. A comparative analysis of traditional project management and AI-driven project management. In organizations like Accenture, Siemens, and Amazon, project workflows are streamlined using AI, and in 2030, 80% of project management work could be automated in the US (Voznytsia, 2025). AI will not replace the work of project manager’s rather, it will reduce the time taken for manual effort and will be mostly used across the organization.

Depending on the market needs and standards, project management is evolving, in which AI-enabled tools are used in project management to automate processes and improve efficiency. The roles of AI in risk, planning, resource allocation, and engagement of the

team are analysed with a qualitative approach with existing literature papers. Risk is mitigated to improve the potential of AI. Though data security, ethical concerns remain challenging, the findings prove that PM using AI improves process, workflow optimization, leading to task completion (Enache and Georgescu, 2025). The organization started using AI in project management along with Agile, Scrum, which requires a technical person to handle them. This reduces the manual effort for project managers and helps to handle multiple projects at the same time. To hire a technical person, the organization needs to undergo a restructuring process, which leads to a lack of time, priority. As a solution, the paper suggests using AI for prioritizing and automating repetitive tasks. These findings were gathered through both qualitative and quantitative analysis to evaluate the effectiveness, which is used in the thesis to collect data via a survey (Voznytsia, 2025).

Integration of AI through chatbots brings transformation in education. A comparison is done between rule-based chatbots and generative AI-powered chatbots. Natural Language Processing is the base for both chatbots, but traditional chatbot uses rule-based whereas generative AI chatbot uses deep learning. This helps the educators and the stakeholders to choose the correct chatbot for learning purposes. Privacy concerns are also one of the differences between the two chatbots. (Chetiwal and Arulsamy, 2025). Using Agile in project management provides enhanced delivery. A combination of agile and hybrid project management is effective in adapting to patterns, feasible to review the development. This was proved through a literature review conducted from Google Scholar, SCOPUS, with the research papers from 2015 to 2025. Agile and hybrid project management mostly involves flexibility, collaboration, risk reduction, and faster (Mogau and Bokgoje, 2025).

Integration of AI in agile project management improves decision-making. AI uses

ML, NLP to predict the data to assess team capacity, which results in optimized sprint planning. The dashboards are continuously updated with real data, which reduces the manual effort for project manager's thus reducing the delay. There is better communication between stakeholders, the scrum master, product owners. By integrating AI with agile increases the delivery is enhanced with adaptability even with complex projects. There are tools like Monday.com, ClickUp, and Wrike, which are used along with AI for tracking, scheduling, and automating workflows (Willie, 2025). The complexity of the project increases when the organization starts using more software. Waterfall and Scrum are not sufficient to handle these complex projects and meet the deadlines as planned. Therefore, a hybrid methodology is suggested for effective delivery and maintenance. The measuring levels are evaluated based on 11 different parameters. Thus the agile with hybrid methodologies increases stakeholder satisfaction, timely delivery, and also improves collaboration within the team. Nowadays, in most areas AI AI-enabled chat is provided to customers, and also Artificial Intelligence-enabled feedback is taken from customers, based on which improvements are made (Jamous et al., 2025).

With the increasing complexity of modern projects in IT combination of agile and hybrid is efficient. The context of the project is interpreted using AI. Using NLP and conversational AI, it identifies the contexts in a project, such as stakeholder communication, backlog items, tasks that were performed manually spend hours by project managers during a sprint review and sprint planning. Agile follows Scrum, which involves sprint review, sprint retrospective, and sprint planning, which further makes the process more efficient. Additionally, ethical considerations should be considered when implementing, as it involves deployment. The framework has four layers, namely the input engine, output engine, context engine, and generative AI model. Each of these performs its own functionality to handle the project's process (Olabowale, 2025). Once an organization

starts implementing Artificial Intelligence in one area, like project management, which is a widespread area, it is likely expected to implement even in other areas, for example, recruitment, where AI decides whether to reject or select a candidate based on the skill set and requirements provided using a neural network, which uses a methods and a technique related to data mining. At the end of the modelling, the AI decides to either select or reject a candidate for an open position, which in turn reduces the processing time (Beraich, Amouri and Malainine, 2022).

Nowadays, outsourcing and development projects are becoming complex as technology improves, which is handled with a contractual framework in order to bring trust, agility, and accountability between clients and the delivery team. The models evolved are outcome-based contracts, smart contracts on blockchain, alliance and partnering agreements, which help in providing a well-crafted strategy-based management plan to handle the projects. It is most commonly used in places where there is constant change, shifting business, and distributed teams. It also involves providing delivery workflows, outsourcing collaboration models, and optimizing team performance. This research paper uses real-world case studies, strategies that help to thrive in this era of Artificial Intelligence(Khang, 2025).

The research work uses a hybrid model of top-down and bottom-up approaches with a specified agile methodology following sprints in project management. A deep literature review is performed to gather the previous year's findings and to handle them in the thesis. The thesis uses a mixed method (qualitative & quantitative) to collect data from different participants and analyze them for further processing. An AI-enabled project management tool is used along with agile methodology for automating management activities, which reduces the human-prone errors. The comparative analysis of activities before and after the use of an AI -enabled project management tool is also performed with

a graphical representation. A framework to provide a stepwise training process to train employees in using AI in project management to increase growth, improve efficiency.

1.2 Research Problem

Organizations follow the traditional way of Project management, which takes up most of the manual efforts, time, and involves repetitive tasks, which leads to human-prone errors. A few of the tasks may not be tracked on time with manual effort, but with Artificial Intelligence-enabled project management reduces the effort is reduced and also provides accurate tracking of the progress of work done, which reduces the management work. There is limited research on project management in AI in the corporate which shows that the use of AI in project management is effective.

Previous research discusses the strategies, impacts of AI implementation in project management in areas like decision making, risk management, and resource allocation, which improve efficiency. Current available research discusses that the use of AI in project management is efficient, but the analysis of backlog items in a sprint with each project management activity, along with AI AI-enabled project management tool, is not specified. The reason why most organizations have not moved into project management using AI is that the resources are not trained enough to grab things and work on Artificial Intelligence in a stepwise process, which was the research gap from previous years. The use of a specified AI-enabled project management tool to automate repetitive tasks on the sprint board, along with each automation query for each of the sprint activities, is not specified, which will reduce the manual efforts for the scrum team as well as the quality assurance team, which is also lagging behind the previous research. This research paper lags in identifying the loopholes in the project to improve the quality with the use of AI.

The thesis aims to examine how the AI-enabled project management overcomes the difficulties faced during traditional project management and reduces the project managers'

time. It automates the repetitive task for the backlog items in the sprint board. This aims to first gather information from project managers on how traditional project management works, areas where it fails, and whether the assigned product backlog items are completed within the sprint. Along with project managers, AI is used to reduce the time taken for quality assurance in their manual process of writing test cases and logging bugs. This thesis also shows the framework in a step-by-step process on how the resources could be trained to understand, tackle difficulties, and implement Artificial Intelligence in project management, with a hands-on practice in using Artificial Intelligence. Organizations ensure that the AI-enabled project management is brought to the attention of the respective stakeholders for a smoother process and to keep everyone on the same page. When few resources are trained in AI-enabled project management, it would be helpful for the organization to start with a few projects and end up with all. Though AI-enabled project management has disadvantages, it has its own advantages and efficiency. The right tool to maintain a project and track it would play a vital role in the successful delivery of the project. A hybrid model is a combination of a top-down and bottom-up model, where a top-down approach involves setting goals, budget estimation, timelines, and a bottom-up approach involves estimations, real-time performance monitoring, and tactical decisions. The survey provides the details of manual project management along with its difficulties, and also AI-enabled project management to reduce the time, timely delivery through a survey. It also includes live examples from AI AI-enabled project management tool.

(i) Traditional Project Management and Artificial Intelligence Enabled Project Management:

Project management involves planning, decision making, collecting documents, creating tasks, assigning to resources, tracking tasks during sprint review, dropping emails for bugs, and writing test cases. In traditional project management, a project manager/

scrum master generally assigns the resources for each task associated with the product backlog item, manually tracks the progress of hours in every sprint, and in case it's not tracked, the risk of not delivering the PBI will be unknown. As a result, automatically the PBI gets moved to the next sprint, whereas in AI-enabled project management, the progress is automatically tracked and the project manager is notified of the risk for a PBI accordingly, a decision is taken by the project manager. From a quality assurance point of view, all the test cases are written manually and uploaded into the sprint board, which takes manual hours of work, whereas in AI-enabled project management, a correct “prompt” is required to derive all the required test cases for a specified requirement, and the time taken is also reduced. This also increases the coverage, reduces time and improves product quality by executing them.

(ii) Strategic Planning, Artificial Intelligence Implementation and Artificial Intelligence Tool:

Organization should ensure which project management tool needs to be implemented, depending on the usage. Organizations should get the suggestion from the respective project managers before choosing/implementing an Artificial Intelligence tool in project management. Stakeholders' satisfaction also plays a key role when implementing an Artificial Intelligence tool for project management. Once the tool is decided concerned resource needs to be provided with appropriate training, depending on the organisation's budget, in a step-by-step manner to cope with and start implementing AI in PM.

1.3 Purpose of Research

- The main purpose of the thesis is to automate repetitive tasks in project management using an AI-enabled project management tool, which is performed by project managers to reduce the manual efforts, time and human errors. The tool automates repetitive task like planning, create task/sub-task, resource allocation,

status updates, tracking the progress, burndown charts, virtual assistance, email triggering for all updates, testcase creation for quality assurance team via prompts, risk management, automated reporting, stakeholder satisfaction and also includes visualization maps to provide the overall roadmap of that particular sprint to the entire team members. If AI is used in project management, it will reduce the project manager's time, bring stakeholder satisfaction, and improve efficiency.

- The thesis also aims to improve the quality of the product by implementing AI in the quality assurance team for work like bug logging, testcase creation, and tracking of bugs, due to which it focuses on a hybrid model, which is a combination of top-down approach and bottom-up approach in Agile methodology, along with the use of AI in a project management tool. Any number of automations could be added to the board based on the usage by project managers.
- The thesis focuses on providing training to resources based on the ADDIE instructional model in a step-by-step process so that resources can work on Artificial Intelligence-enabled project management. The stakeholder satisfaction also plays a key role when an AI-enabled tool for project management is used, and it needs to be communicated to the stakeholders from the end-to-end process of the implementation plan and testing plan, which makes things feasible and avoids being misled on the track and delivered on time. Every time, project managers have to present the progress to leadership and stakeholders to keep them on track with the product.

I. The objective of the thesis is as mentioned below:

- To provide an analysis of PBIs on the board to improve the overall performance of the project by automating repetitive tasks. The AI-enabled project management tool helps to provide the overall summary when searched with the appropriate prompt,

which helps the stakeholders to communicate the exact delivery of the product to their valuable clients.

- To detect bugs and other loopholes in the project management to strengthen the quality assurance team and to improve the quality of the project.
- To provide by step-by-step process to the organization to train their employees in Artificial Intelligence skilled techniques.

1.4 Significance of the Study

The findings of the thesis help to reduce the manual efforts for project managers by implementing AI AI-enabled project management tool, which improves the efficiency, stakeholder satisfaction, and growth of the organization. It helps us to identify the areas where the delivery is affected via a survey and how AI could be used in an organization's project management to reduce the manual efforts of project managers who spend plenty of time on project management. The use of AI in project management is mainly to automate repetitive tasks. It also shows that the delivery of the project could be made on time without any delay. This has an impact on stakeholder satisfaction in meeting the expectation. This not only helps to reduce the project manager's time but also other resources' time like for example quality assurance team, who manually write their test cases by providing a correct prompt in AI and uploading them on the tool. When these test cases are executed, the bugs are found and fixed by the team, which in turn increases the quality. This reduces the time for project managers from planning to the delivery of the project.

Most of the organizations follow Agile methodology, but not all the steps are followed in an appropriate manner. The thesis helps in analyzing the PBIs on the board, identifying the risk and communicating to project managers so that the team can concentrate on their work. It automates repetitive tasks like resource allocation, status change, reporting, tracking, and notifying the assignee, which in turn reduces manual

efforts, minimize errors, and prevents delay. The stakeholders receive timely updates on the progress of each task via email, which makes tracking efficient. When any task is created, if there are duplicate entries, they can be identified and eliminated with the help of AI. Project managers create an automation for multiple items to change the status of the task from “Todo” to “done” once the due date is completed, which in turn reduces the manual effort by the project manager.

In view of the quality of the product, the findings help to tag bugs to the respective task, and once they are fixed, it is easy to track along with the task even in future. This will improve the quality of the project by reducing similar bugs in future. All these could be done by a project manager who is already trained in AI by the organization in a step-by-step process, which also involves hands-on practice sessions for them. Through this AI-enabled project management, the project manager’s aim is not to make project managers lose their jobs; instead, the purpose is to reduce their manual efforts and time taken to process things manually for every sprint and utilize the time for other project-related development activities and make timely delivery, along with meeting the expectation.

1.5 Objective and Questions

Repetitive tasks like tracking the progress, resource allocation, status change and similar tasks on the task board could be automated using AI enabled project management and also quality assurance could reduce their manual effort of writing test cases using AI so that more scenarios are covered which in turn reduces the bugs or loop holes within the project and helps to improve the quality of the project.

- I. The thesis meets the following objective,
 - To provide an analysis of PBIs on the board to improve the overall performance of the project by automating repetitive tasks. The AI-enabled project management tool helps to provide the overall summary when searched with the appropriate

prompt, which helps the stakeholders to communicate the exact delivery of the product to their valuable clients.

- To detect bugs and other loopholes in the project management to strengthen the quality assurance team and to improve the quality of the project.
- To provide by step-by-step process to the organization to train their employees in Artificial Intelligence skilled techniques.

There are two different surveys used in the thesis, and the questionnaire set varies for each survey set. The survey on the traditional method of project management which uses manual efforts mainly focusing on project management using Agile methodology, involves the following categories of people working in the corporate industry includes project managers using the traditional approach, developers & QAs working in traditional project management, scrum masters who take project management responsibility, product owner working on traditional project management, scrum team members. The survey for implementing AI in project management over traditional processes involves participants working in different domains at the Senior Level. This includes project masters who take project management responsibility. Managers using AI from various organizations, resources working on project management using AI, and Scrum.

II. The research questions of the thesis are as below,

- RQ1: How to analyze Product Backlog Items (PBIs) during a sprint, using AI tools in project management, which will reduce the manual efforts for project managers?
- RQ2: How can the quality of the project be improved by implementing AI by the quality assurance team?
- RQ3: How to train employees in an organization in Artificial Intelligence to handle the AI-enabled project management tool?

CHAPTER II: REVIEW OF LITERATURE

2.1 Theoretical Framework

As part of the thesis, the following theoretical framework is followed to explore, gather, review and analyze the research papers through the provided standard keywords.

- Research papers searched with AI in project management
- Research papers searched for Project Management using a hybrid approach
- Research papers searched which involve the Implementation of AI in project management with agile methodology
- Research papers searched with Different phases of project management using AI
- ADDIE instructional model to train employees

The thesis uses a hybrid model, which is the combination of the top-down approach and the bottom-up approach. A top-down approach is breaking a larger problem into smaller pieces where the decision-making flows from top management and the individual decisions are not involved, whereas a bottom-up approach is integrating all the smaller modules to form a bigger module and the individuals, along with top management, are involved in decision-making. In a hybrid model, the high-level view is broken down into smaller pieces, and in order to follow realistic planning, the top-level management, along with team members, are involved in the decision-making process. The feedback and concerns from the team are also considered in the overall process. This will reduce the discrepancies and communication gap between the management's view of the product being developed and the real team members' view of the product, as the team will be entirely working. During sprint planning as well the product owner gathers the opinion

from the scrum team members to add any additional PBIs if required. Therefore, the team members' opinions are also gathered to maintain a smooth process in product development.

The thesis, along with the hybrid model, uses the Scrum framework, which involves the sprint iteration. Each sprint lasts for 2-4 weeks, and the main advantage of a sprint is that the backlog items are split up in each sprint, which makes it feasible, easy to understand and also provides the required development time. The scrum involves sprint planning, sprint retrospective and sprint review in an orderly manner. Sprint planning is taken care of by the product owner, but inputs from all scrum team members are gathered, sprint retrospective answers questions like “what went well?” “What needs to be corrected?”, sprint review involves the demo provided for the completed items during the current sprint in order to keep all the team members on the same track.

2.2 Theory of Reasoned Action

According to (Wrobel, Dietzmann and Alt, 2025), organizations fail to integrate AI projects and solutions. Hence, there is no answer whether existing project management frameworks which are existing could cover the complexity of individual projects and make decisions based on the challenges in using AI in project management. This research aims at the qualitative analysis with interviews from 12 experts who are from different industries, different countries, who belong to either a practical or scientific background and examining them using a thematic analysis, which provides 54 AI challenges in project management. They are applied to evaluate 12 AI project management frameworks. The identified seven areas of improvement include ethics, culture, regulation, sourcing, evaluation, impact and modularity guidelines. The results are validated using SLR by (Vom Brocke et al., 2009), and the results are examined based on practical utility. This work will provide a base for AI project management artefacts. A thematic analysis consisting of six stages was used to extract the qualitative insights from the collected data. An exemplary

thematic analysis was used to derive C38, C40 and R11 from the SLR and data collected from experts via interview, along with 54 project management challenges and requirements. This research has a limitation, which includes the broader expert interview, which offers more real-world challenges. The identified requirements R1-R16 are used to derive design principles for crafting novel AI project management artefacts. Though the paper collects data from 12 different experts to show the challenges of AI in PM, with multiple requirements analysed, it doesn't explain how AI reduces the time taken by PM by automating repetitive tasks. The analysis highlights the gap in the existing framework, showing the need for enhanced guidance to solve AI project management demands in the environment.

The research (Taofoek et al., 2024) was performed using a case study and industry standards to understand how AI is utilized in project management on a large scale. This paper not only explains the transformation to traditional project management but also provides innovation in the industry using the project manager. This helps in most of the industry sectors. The implementation of AI in project management helps to reduce the time taken for manual processes. It explains the predictive analysis of risk management, Enhanced decision making, communication tools, budgeting and cost management, team management, and mitigation using a case study, which provides an AI algorithm. The study states that there is no need to be performed by project managers to perform a task daily; instead, they could make use of AI. Though the study explains how to use AI in project management using a case study, there are no live examples provided to show how it is being used in an AI tool by project managers. The case study undertaken has a theoretical explanation of using AI in project management to reduce the manual effort of project managers, and no live examples are provided in any case to showcase the efficiency and effectiveness. It has a challenge of providing training to resources using a framework, due

to which project managers face the difficulty of understanding the working of AI in project management. There is no explanation for the scenario where AI in project management doesn't become a replacement for the project manager's job as the task is performed by AI, and this requires further research in future. Further research needs to be done to communicate with stakeholders on the process opted for in managing the project using AI and the areas affected by it.

The research performed by (Adamantiadou and Tsironis, 2025) utilized 97 peer-reviewed research papers from 2011 to 2014 to improve cost estimation, forecasting and risk assessment by using the PRISMA methodology. The real-world implementation and understanding of AI in PM are through creating decision trees. The PRISMA model uses the information to achieve the desired outcome. The reason why the PRISMA model is used is because of its widespread use across all domains beyond the medical field and its consistency. Keeping in mind to minimize duplicate results, the data collection used two different platforms, named Web of Science and Scopus. This provided 10,043 records initially by searching using the below-mentioned keywords, along with double quotation marks, which will provide exact matching results.

- “Artificial Intelligence” and “Project management”
- “Machine Learning” and “Project management”
- “Deep Learning” and “Project management”
- “Neural Networks” and “Project management”
- “Natural Language Processing” and “Project management”
- “Fuzzy Logic” and “Project management”
- “Heuristics” and “Project management”
- “Forecasting” and “Project management”
- “Data Analytics” and “Project management”

Multiple filters, like published date, journal quality, duplicate removal, and language, were used to narrow down the search to include high-quality research in the final review. By applying multiple search criteria to optimize the dataset finally it is finally brought to 3292 datapoints. Further Scimago ranking was used to break down to 1618 datapoints. Duplicates were removed, and the dataset was further reduced to 1033 datapoints. These articles were read and evaluated to prepare a final dataset with 97 entries. The evolution of AI, as per the research, shows that from 2011 to 2012, AI was introduced with hybrid models. From 2013 to 2016, advanced models like fuzzy logic, neural network was introduced. From 2017-2019 marked a high shift towards AI by integrating real-time data. NLP, IOT, and DL were used between 2020-2021 for enhanced communication. From 2022 till now, the focus on including AI in multiple PM areas, including stakeholder challenges and management, to brought a huge amount of innovation and success in delivery. The decision tree from Figure 1 explains the different hybrid models adopted for different combinations of PM outcomes. Hence, further these models are explained in detail based on the model-wise. Further research should be expanded, focusing on project communication to stakeholders. There should be a framework for a feedback loop to improve continuous development.

According to (Jha, 2024), AI in project management is used for cost savings, project quality, and project timelines. AI is used in all phases of project management from planning to execution. This paper also highlights the need for data security, ethical considerations. It helps organization to have a swift in the environmental landscape. The objective of optimizing PM through data analysis and automation with AI includes the below key points: enhance efficiency, improve decision making, mitigate risks, enhance collaboration, adapt to changing conditions, promote scalability, and enhance client satisfaction. A Google Form survey is used as a platform to collect the respondents'

information, from which 90% of the respondents' state that optimizing PM using AI and its automation can change project management totally. 10% of the respondents are worried about the drawbacks, like job loss, and training to gain knowledge in AI. It helps project managers to increase productivity and efficiency, thus reducing the project failure. Though the paper explains how PM could be improved using AI, it lags in areas like training resources, resource constraints, and quality of the project. This paper has explained the use of AI in PM from decision making to delivery theoretically and not with live, practical, tool-based examples. It also doesn't explain how AI reduces the manual efforts from a QA point of view, and the automation prompt is not explained.

The research by (Crawford et al., 2023) aims to compare eleven different publications on AI in PM and compare their surveyed works. This suggests the utilization of AI in software and provides the path for future research. Most of the papers agree that AI would change the software development projects. Additionally, AI would be helpful for developers in coding, more than in project management. The source from Zohair was the survey from a software field professional, stating not only the use of AI in software to prevent failure, but also showing the areas which may not need the intervention of AI in software to prevent failure. The research finally concludes that the use of AI in project development will be there in the next 30 years, and also if the use of AI in software projects, like cost estimation, planning, increases the success, then it is recommended to use AI in project management.

According to (Oluwatoyin Adegbite et al., 2023) challenges in using AI and their understanding are performed using case studies and academic research. The paper focuses on ensuring the project's success using cutting-edge technologies like ML, AI, Data analytics, etc. on the effectiveness in project planning and the decision-making process. It ensures that project managers are involved in handling these technologies in an innovative

environment, and thus making organizations improve more in their innovation. It also highlights the role in continuous skill development and learning for knowledge improvement. The research follows a systematic analysis of papers from 2010 to 2023, from which the paper published by Vinoth and co-researchers used a fuzzy model for the selection of international project management. Using meticulous methodology, it employed a systematic LR by collecting a wide range of sources which use modern project management techniques. The case study selection process involves the methodology used and a review of the literature in PM across industries. Thus, the study concluded that the use of new technologies has not only increased the project management process but also provided more opportunities and challenges. The study also shows the necessity to adapt to the changing technology to bring more innovative approaches, practices in PM. It is helpful for practitioners, academic students, and people providing guidance, which in turn increases the trend in the 21st century. Thus, as a result, ML, data analytics, and AI played a vital role in project management to improve the efficiency in project planning and decision making.

The literature review performed by (Felcenloben and Moroz, 2024) shows that organizations use a hybrid model, which is a combination of waterfall and agile models for project management. The main reason for the hybrid methodology is to be more adaptive and flexible, and also, it will avoid failures and help to increase the success rate. This paper follows an LR, and it is an SLR with the following 8-phase process, and they are defining the purpose, agreeing on protocols, agreeing on screening rules, literature search, data extraction, appraising quality, data Analytics, and review. The discussion states that most of the hybrid models combine the agile and traditional approaches, which is not the case, as there are a lot of project management methodologies in the modern industry. They considered using the hybrid approach only during the following scenarios: when a new

project is started, a new initiative is taken from scratch, changing a project approach to a new approach, scaling, change of scope/budget/time in the project. This also shows that the previous project management has specific attributes that are divided into groups combining two different areas, as mentioned below.

- Principles and values
- Process and knowledge areas
- Practices and standards

The approach of the hybrid model is not precise/easy and would require interpretation; furthermore, more research as most of the research is vague, as they are only theoretical bases. It concluded that it brings more benefits than risks. More research needs to be done by considering not only agile vs traditional PM methodology, but also other methodologies. In the IT industry, these are more popular, whereas in other industries there are lot of research happening to suggest the methodology to obtain gains and to avoid risk.

The research by (Rahi, Jakhete and Duvey, 2024) explore the decision-making concept in project management through various project life cycle phases. It compares the GenAI framework, which is already in use and suggests a practical framework, and also provides a few recommendations for future project management to be successful. The process states that AI in business helps to evaluate enormous datasets. The results are then implemented to investigate customers' views to deliver products within due time. AI virtual assistants and chatbots help in providing continuous support to customers, thus seeking customer satisfaction throughout the SDLC lifecycle. In supply chain management, AI is used to reduce cost by automating the manufacturing process. AI helps in identifying market trends, thus helping organizations understand customer needs on a timely basis and provide good customer satisfaction, which in turn reduces cost. GANs use dual NNS, namely the generator and discriminator, which are used in picture synthesis, art generation.

VAEs can encode data before decoding it, and they are used in audio, text generation. The autoregressive algorithm produces single-component data from the prior components, helping in the next development. Transformer-based models are used for solving critical problems in PLM by using natural language processing techniques. As per the LR performed, 61% of workers use GenAI, 68% of workers believe GenAI will increase customer satisfaction, and 67% of workers believe that GenAI will increase investment returns. There is a high shift in PLM using GenAI. This study highlights the importance of ChatGPT in project management. The various stages of GenAI in PLM include the identification of business use cases, determining the user requirements, selection of input-output formats and the LLM, adapting to prompt engineering, and implementing the platform. This process will help the team to run the LLM jobs to obtain the desired output, thus increasing the flexibility and accessibility for developers, storage infrastructure.

The systematic review by (Rahman, 2024) in PM using 133 peer-reviewed articles to examine the adaptability, flexibility in using the project management methodologies like agile, waterfall, scrum, and PRINCE2. The hybrid approach involves the combined use of agile methodology and the traditional method of waterfall was found in most of the research papers. Agile methodology is used for delivery, stakeholder satisfaction, and customer feedback, while waterfall is used for requirements and documentation. The study highlights the ways to avoid the risk in the early stage through risk management in agile methodology. This study used a PRISMA analysis for the systematic review of the papers. Agile methodology is mostly used across most organizations for management purposes. Waterfall remains to be used in a few organizations in a limited approach. These are shown in the research using an additional diagrammatic way to be more precise. PRINCE2 is introduced by the UK government and is mostly adapted for international projects, which include stages like initiating, directing, managing and closing the project, which concludes

that there is no proper planning and customer satisfaction in this methodology. The study shows that the Agile methodology remains dominant across IT projects, but further research is required to expand it across non-IT sectors, thus improving delivery across all industries.

The study (Martins, 2023) shows the evolution of traditional PM to AI-driven PM. In traditional project management, there are fixed requirements, structured execution, whereas AI projects depend on their data, uncertainty and development cycle. Traditional project management has predictive risk management, whereas the AI PM will be based on dynamic risk assessment. Key differences between traditional and AI-driven PM are the risk assessment, stakeholder satisfaction, and Quality assurance. The paper also explains the responsibilities of project managers in taking up the knowledge on AI for PM. Project managers should overcome the complexities in AI-driven PM through their knowledge. For the research, the paper follows the steps of examining key characteristics of traditional PM, analyzing the landscape, identifying the adaptations for AI in PM, highlighting the differences between traditional and AI PM, and exploring the future of PM using AI in this era. Deep down to understand more about traditional project management, the following areas, like key characters, core principles in implementation, a few examples of traditional AI, and limitations, are studied. Similarly, all these areas are studied in AI-implemented PM for comparison purposes. Thus, the results show that AI-driven PM will be the future across organizations, though it has some drawbacks and difficulties in implementing during the initial stages.

The article (Voznytsia, 2024) shows the potential transformation of AI-driven project management in areas like resource allocation, risk assessment, and schedule optimization. This helps project managers to detect project delays, running out of estimated cost and prepare to face the outcomes. This also explains the challenges and the need to

train resources in AI, and change the project framework to a new AI-driven framework. The future of AI-driven frameworks and the competencies of AI in the evolving projects are also discussed. This provides the roadmap for its growth and effectiveness. The AI integration in project management is not only used to improve efficiency and effectiveness but also to reshape future projects. This predictive analysis in AI-driven PM uses the latest technologies and methodologies, each of which plays its own role. Machine Learning algorithms are used to predict patterns and help predict outcomes such as budget overrun, quality issues, and project delay. Data mining helps in extracting patterns from a large set of data, thus helping to identify the risk level leading to the success or failure of the project. NLP is used to analyze textual data and helps in risk identification, communication patterns within the team. Simulation and scenario analysis help to identify how the project goes under various scenarios, thus helping managers to show the impact of different decisions made. Time series analysis is mostly useful for long-run projects by showing the future values by comparing them with the previous values. Ensemble learning combines multiple machine learning techniques to improve the prediction accuracy. Big data technology is used to analyze the vast amount of data populated by the project.

The research (Banderi and Bhanderi, 2024) illustrates the AI in PM with case studies and practical examples to manage resource allocation, decision making, and workflow. This paper also discusses the challenges faced in AI-driven PM. They use tools like ML, NLP. An AI decision is explained with an example in IT software, like if a project has a tight deadline and if one task is delayed, AI will suggest the resource reallocation to meet the deadline on time. AI in workflow optimization helps to automate repetitive tasks, and communication within the team is improved by sharing real-time data updates. In risk management, AI analyses the previous data from previous projects and identifies the deviation from the track to intimate project managers to make better decisions. AI can also

be used to analyze the past market trend vs the current market trend. When adopting AI-driven PM, data privacy and security are the concerns. There is a need for continuous learning and adaptation to AI-driven PM. Proper training needs to be provided to resources to get hands-on experience in PM using AI. A few recommendations to organizations to adopt AI in PM are provided, such as a clear understanding of what the challenge lies within the project before proceeding, how the resources are provided currently, what the project run time is, and how to deal with the project details. Though AI in PM has a few challenges, it is useful in a few areas.

The research (Sahadevan, 2023) shows the benefits and challenges in using AI in project management for managers. The benefits include improved decision-making, cost reduction, and increased efficiency. This also shows project managers how to collaborate with evolving technology in project management. The key benefit of using AI in PM is to spot risk by analyzing the data. The risk detection tool analyzes a vast amount of data, which helps to find the trends in order to identify the risk. This will help to handle any problems before they are escalated. Additionally, project team members can identify the risk and find the fixes from the prompts provided using AI. The collaboration tools help team members to connect to track progress, and exchange data irrespective of their location. This helps project managers to lessen the efforts of team members by providing more responsibilities to handle things using AI. In overview, AI helps organizations to improve the overall performance of the project. This study shows a few tools for PM, which are Clarizen, Forecast App, monday.com, Asana, and Trello. With the help of AI tools, project managers can concentrate on the process by choosing the most suitable course of action to reach the project goals. The success rate of the project goals and delivery also increases with this. Sometimes, with the use of AI in PM, the satisfaction level of stakeholder expectations for the project may be increased by increasing effective

communication. The need for central management is reduced with the use of AI in PM, thus increasing the team members' ownership. Though there are a few challenges like data quality, lack of expertise, ethical concerns, cost, integration with existing system, ethical concerns but, the percentage of people who opt for using AI in PM is more in future. More than 80% of the respondents show that they have an impact by using AI in PM in their respective projects. As a result, the collaboration by project managers is also improved to raise the growth of organization.

This paper (Aliyev, 2025) shows the improvements in project management using QAI to handle the issues, resource inefficiency, delays, and budget. There are a few comparative analyses, like cross rail projects, east side access and Montreal Olympics highlight the use of AI and QAI when compared to conventional techniques. This shows that QAI reduces the delay by 60%, increases the efficiency of resource allocation by 83%, cost runovers are cut off by 40%. This study also shows how QAI is applicable across industries and in real-time optimization. A variety of AI methods, such as Rule-based AI, Machine learning based AI, Quantum approximate optimization algorithm, and Variational Quantum eigen solver, are chosen to be used in this paper depending on their past performance using high-dimensional data. Integrating QAI in projects rather than traditional processes is done using combining quantum computing and AI to handle complex problems. This study compares the features like core focus, Data handling adaptability, tools, use cases, foundation, and scalability between traditional PM, AI, and QAI by using quantitative and qualitative methodologies. The case study for the methods is based on a few points, like the integration of cutting-edge technology for the Cross Rail project, a lengthy infrastructure project having difficulty in resource allocation, which are used for the East Side Access project, a historical example showing inflation, and labour disputes for the Montreal Olympics. The detailed way of description and methods/tools

used in different stages of research, from literature review, data collection, to validation, is shown in the paper in a tabular form. All these case studies show that QAI provides 40% more efficiency in various parameters and also show that it is the foundation for future projects by bridging theoretical advancements in practical life. It also shows the use of QAOA to decide on already existing projects. It also shows that if the infrastructure is in an early stage, then QC resources would be more efficient. Thus, PM using AI and QAI played a vital role.

The research by (Vergara et al., 2025) analyses the trends, thematic areas and directions of AI in PM in the future by providing a comprehensive bibliometric analysis. This research focuses on resource optimization, ML, and information management. It was observed that there is an increased impact of the use of AI on PM and project managers. The paper uses the research trends for analysis purposes. The bibliometric tool was used to analyze the related data from Scopus and Web of Science due to their high relevance and widespread use in bibliometric studies. Systematic reviews and PRISMA are used to report data collection. A more generic query, stating “Artificial Intelligence” or “Project management”, was used for data collection. The study initially focused on the papers published from 2015 to 2024, but after applying the selection criteria, it was found that there were papers from 2015 to 2018. As a result, though the study period is from 2015 to 2018, the publications originated from 2019 onwards. From Scopus, 410 documents were identified from Scopus and 184 from Web of Science, so the total is 594 and of which 148 were eliminated as they were duplicates and 446 documents were analyzed. The abstraction was manually analyzed to verify whether the inclusion criteria were met. So, based on the inclusion criteria total of 115 documents remained after all the rejections and eliminations. The data analysis includes cluster analysis, co-citation analysis, and citation analysis using a bibliometric tool. The bibliometric method uses both quantitative and graphical

information to perform the AI in PM, thus adapting to the changing environment in the industry and also reshaping the traditional PM. There are three clusters: one focuses on cost, model, big data and the second focuses on AI, analytic hierarchy process, system and the third cluster merges project management, artificial intelligence and information management. Project managers and PMs has increased the usage of AI in their projects, thus increasing the efficiency.

The Research by (Duică, Vasciuc Săndulescu and Panagoreț, 2024) shows the different technologies of AI used in project management and also the advantages, benefits provided to the organization by the use of these technologies. Additionally, this paper also focuses on the skills managers should learn in order to adapt to these technologies. The paper also shows the challenges and problems faced when using AI technology for PM in an organization. For all these details the research paper used exploratory research as the research methodology since AI is a developing technology. Exploratory research analyses the current trends, opportunities and helps to choose the up-to-date approach to succeed. For example, when making a decision, managers come up with many questions, like non-discrimination, confidentiality, transparency, etc., which could be solved using exploratory research. It also helps researchers to identify the relevant case study and guidance, which helps in providing more value to the field of project management. Project management statistics play an important role in evaluating the project performance. 98% survey participants come up with working remotely, which requires efficient remote project management tools. It is a bit difficult to understand the current state of industries as the PM demand keeps increasing. As the experience grows on resources start developing their skills in PM irrespective of the domain and mostly use Agile methodology. The global economy needs 87.7 million project management positions by 2025. The statistics show that PM involves 50% stakeholder engagement, 40% risk management, 35% planning and

25% resource management. All these process needs to be used in a correct way to achieve the project's success, which involves the project manager's efforts as well. AI also helps in monitoring employees, planning and organizing work so that managers can focus on high-value-added tasks like innovation, support to employees, communication with the team, and helping the team to achieve new goals.

The paper (Diao, 2024) explains the history of AI and its uses in various industries. This paper elaborates on the use of AI in PM in areas like planning, cost estimation, quality management, decision support, risk management, optimization, and resource allocation. This thesis also shows the challenges in using AI in PM, like data quality, algorithms, and skill requirements for managers to adapt to the change. This paper shows the challenges in traditional PM over AI in areas where a huge project is managed, and then there will be requirement changes on the fly, which will be difficult to handle. For those projects, there will be multiple stakeholders who need to be communicated with about all the changes. These challenges could be handled in PM using AI, where the planning is done even for huge projects with their historical data. Even the cost estimation could be analyzed more with AI using big data analytics, which in turn is also a drawback in traditional methodology. AI also uses historical data for cost estimation, but it also compares with the real-time information before providing predictions. In traditional method the communication between team members occurs either via emails or team meetings which will be missed by the resource in case if the resource is not available whereas, using AI it will be easy all everything is recorded and it also provided online chat, task sharing and assigning further making it easier even for resources who might be away for a day or more. The software used for managing all the activities is the trend in PM across industries is to better adapt to the complexity, uncertainty of the project to improve project performance. In future, as AI in PM increases in development, the role of this software in markets

becomes popular and plays a huge role in PM, thus satisfying all the needs of project managers and also helping organization in delivering the projects without deviation and with client satisfaction.

The research (Bushuyev and Ivko, 2024) provides the management of innovative projects. The solution provided in this research is for the problem related to the application of models, principles and methods for evaluating various elements like interdisciplinary collaboration, AI, and various methodologies to make the project outcome successful in syncretic management. The results show the life cycle for managing risk management, resource allocation, and adaptive strategies. The model has the ability to generate ideas, open innovation, scouting, and also implement AI over the project from beginning to end. This will help in cross-functional collaboration where project success requires contributions from various disciplines. The framework model has the following key components, which include vision and strategy of innovative development, portfolio management, management of programs and projects, risk and change management, stakeholder management and knowledge management. This model helps the organization to increase their success rate and also maintain the consistency of the success rate using AI. There are five key success factors which contribute to the success of this model in PM using AI, which are as follows: uncertainty and risk, leaders' communication, flexibility, resource factor, results results-focused. Additionally, a survey was taken by 150 participants, which included lectures and students from Ukraine, Kazakhstan, and Azerbaijan which including even postgraduate students, to find out the gap in understanding the AI implementation and knowledge. As a result, this syncretic model helped in solving the issues in the organization, including planning for future projects. Team collaboration is also increased with cross-team and their innovation level increases

when compared to traditional methods. The respondents also pointed out the fact that the decision quality is increased.

The research by (Ahmed and Altaie, 2021) shows that AI is already used in audio and video processing. Even with the drone footage, the surveying technology could be done using AI. But all of them require research due to a lack of missing software. The papers show that AI will be part of decision-making in the construction industry in the future by supporting the early decisions. Structural engineers will not be replaced by AI; rather, it will support them in designing where an engineer needs to survey a land, watch a design and plan it accordingly for hours, but AI provides the design within seconds. Already, the skilled labor in the construction industry is a shortage and with available labor, if the time is spent in repetitive work, then it would not be efficient. Using AI, repetitive tasks could be made easy, and the time could be utilized for some priority tasks. When working on a larger construction project where the stakeholders are from different geographies, communication and collaboration would be a bit difficult, so with AI, it would be made easier by using AI-enabled project management tools. In the construction industry, one major concern is the weather and availability/supply of materials, which could delay the work. Thus, AI can predict the current data and historical data, using that the risk could be eliminated. As a result, the project could be finished and handed over within the estimated time. The paper states that the use of AI in the construction industry is growing towards the modern environment and is improving efficiency.

According to (Reznikov, 2025) the use of AI in decision making, efficiency, accuracy in construction, IT, and pharma is explored with a study across 84 organizations in the UK, USA, EU and the Middle East. This paper uses a practical use case for scope, risk, communication, cost, and quality. This research combines traditional project management with cutting-edge AI technologies. The findings in this paper play a vital role

in shaping the future of PM using AI, ML, and LLMs. Project charters are used for project integration management. Project charters are transformed by AI-powered assistants. The stakeholder provides the requirements using AI chatbot tools, and the data is processed to provide a structure of project scope. For example, in one of the construction projects, based on the questions asked by the AI assistant and inputs provided by the respondent, the data are structured in a PMBOK standard. Based on this, the team members will be assigned their tasks and project managers will also be provided alert if there is any deviation and make the decision accordingly. A streamlined process could be followed in PM, as the performance deviation from the metrics could also be identified. The assistant also provides recommendations for the project scope, which in turn will increase the satisfaction of stakeholders. Organization also showed that 70% time is saved, and the stakeholders are also satisfied with the performance. Thus, 40% time taken for the project scope is also cut across organizations. In project schedule management, AI plays a vital role in automating repetitive tasks; 50% it is faster than the manual effort required from the project manager's end. This is done by analyzing the history of the project and providing suggestions for schedule management. This paper shows that a pharma company uses AI to predict the duration of the activity with the historical data. Thus, results in 25% more in resource planning and scheduling. It also has a cost overrun, which was reduced by 30% and also reduction in estimation errors. The papers show that the manual effort required for budget estimation is also reduced by 25% by using an AI assistant. Thus, at the end, the quality of the project is also maintained by using AI to identify the defects, thus restricting the deviation from the requirements. In construction companies, resources are important; thus, AI streamlined this process of allocating resources. In overview, the risk management is improved by identifying 30% more risk areas with the use of an AI assistant when compared to the traditional process.

The research by (Sakhawat Hussain Tanim and Md Sabbir Ahmad, 2025) shows there are a few risks like cost overruns, human errors, outdated methodologies, and resource misallocation in traditional project management. This helps in taking reactive to proactive decision making, and real-time risk mitigation by project managers. Cost control optimization is achieved by budget frameworks, financial management, and resource allocation. Productivity and efficiency could be enhanced by minimizing bottlenecks. This research is done by dividing the paper into eight sections. Traditional risk assessment methods are inconsistent as they depend on qualitative analysis. This study also tells that vast datasets are analyzed using machine Learning algorithms to recognize the past data pattern in order to eliminate human bias. One case study from a multinational organization is taken to show that the risk is reduced by 35% in project delays. The study concludes that traditional decision making has human intuition and manual efforts, whereas AI AI-driven method has a proactive approach to PM. Additionally, stakeholder communication and collaboration are increased and made better using AI tools in PM. This paper states that the automation of repetitive tasks using AI is mandatory in order to have more efficiency. It also confirms that the AI will not replace humans, rather it will be a complementary expert for humans, thus boosting managers' capacity, efficiency and also their strategic thinking capacity. In future, this will provide a continuous advancement in PM and also in blockchain. It should also be taken into account that data privacy should be considered. The success of AI in organizations depends on a few factors, like commitment, compliance, innovative thinking, long-term goals and sustainability and also the organization's goal on what needs to be done, what is to be achieved. Organizations need to adapt the AI frameworks, principles, and their adaptability to be used across projects by resources.

The research by (Rehman Shakoor and ud Din, 2025) projects management by automating repetitive tasks using ML, predictive analytics and Gen AI. The project's

success rate is higher, but its effectiveness depends on various factors. It shows that the implementation of AI has its complications due to ethical concerns, human insight. This paper uses a bibliometric analysis to identify the past data trends and evaluate the project's success. The result shows that efficiency, risk management, and stakeholder collaboration could be improved, but the impact varies. Decision-making in PM is also made efficient using AI, but it is strong when it is reliable and leaves a flaw when it is weak, which shows that decision-making acts as a mediator in project management. This happens where the organization has skilled professionals and also good infrastructure. Thus, the study shows that to increase project outcomes, there should be a balance between human judgment and automation when using AI in project management.

The paper (Luna, 2025) shows the risk management strategies using an AI framework in PM. It also shows the risk associated with risk using predictive analysis, automation. Agile and traditional PM are used as case studies to provide practical insights. Even though there are many benefits, there are a few challenges, like data privacy, ethical dilemmas, and vulnerabilities. When AI and structured risk management are combined, it reduces the uncertainty and increases the success. The combination of case study, LR, and comparative analysis is used as methodology and academic papers, reports are used as primary and secondary sources of data. The study is based on three areas of technical risk, operational risk, and regulatory risk. The paper analyses the previous papers and identifies the pattern to indicate the risk. This paper also stresses the need to address Algorithm bias, workforce adaptation, regulatory and compliance risk, and data security risk. Thus, before the risk is escalated, it is identified and mitigated with high priority. This also allows managers to understand the challenges related to budget, resource allocation and efficiency. Integrating AI into project management could be beneficial, but it has its own challenges in implementation. As a result, AI automation reduces human errors in project

implementation. As AI is used across organizations for PM in future, it would be expanded into blockchain and the internet of things. Organizations make sure that AI is integrated with human expertise to have a smooth implementation and usage across project management.

The research by (Grace, 2025) states that traditional PM has its own advantages and disadvantages. Thus, hybrid methodologies are more useful for modern projects as they are more complex to be handled by traditional PM and also hybrid PMs are blended with AI tools. This paper uses AI with hybrid methodologies with the help of case studies and real-world scenarios. It also highlights the security, adapting to change risks with AI usage in PM. As per organization there is continuous usage of AI, and this will shape the future of project management. This paper uses LR for research on what is currently used in PM and the use of AI in PM, a case study to get the knowledge, benefits and challenges in using AI in PM, and data analysis to find out the rate of success in projects which implemented AI in PM. As per the analysis, project managers are provided with a larger volume of data for decision making, and also, they have also used ML to identify the patterns from previous project data. The paper states that risk is mitigated by detecting them continuously and also insisting team take care of them before an issue is raised. Depending on the workload and project requirements, the resource is allocated, and they are utilized efficiently. The manual load of performing a few tasks is repeatedly automated in order to reduce the time for project managers and also to improve efficiency. This paper states that the most important benefit of using AI in project management is that the operations are streamlined.

According to (Adewale, 2025) agile methodologies include Scrum and Kanban, whereas traditional methodologies include waterfall, focusing on structured planning and a linear process. This paper focuses on transforming project execution using AI, using the

case study method in the real world. This targets decision-making, forecasting, execution, etc. This research uses a mixture of qualitative and quantitative approaches, including case study and quantitative data for execution. The study also uses data from many popular organizations in the industry that used case studies in their research. Thus, two areas are analyzed, which are AI in traditional and AI in agile PM. The features in both cases include decision making, flexibility, level of automation, and risk mitigation. The benefits in both the cases include faster efficiency and optimization of available resources. The discussion part of this paper mainly concentrated on four areas like performance, risk, decision making, and workflow. In workflow, it includes prioritizing the task, preparing the report and risk, whereas mitigating risk includes delay in timeline, overrun of budget, and bottlenecks in available resources. This paper has concluded that PM is reshaped using AI not only in agile but also in the traditional way of the structured PM approach. This paper also highlights the challenges faced in using AI in PM, like data privacy, security, because it depends on a large amount of data every time. Another drawback is that the integration of AI in PM by organization and their investment in providing training to managers and other employees to gain knowledge on AI and its uses in PM. Despite this challenge, it improves the efficiency, solves complex problems which arise in PM and has a growth in future in both agile and traditional project management. Project managers or resources need to be trained in such a way that they are capable of handling things as they way it arise by using AI in project management. Organizations growth also depends on the usage of AI in project management.

According to (Spalek, 2016), traditional project management has been used for relatively large applications in the long run since the 1960s. It states that during the planning phase, the entire description is provided in a formal communicated way, and also the quality control happens on a timely manner as planned. Though the traditional method

is being used over a long run, it is not suitable to face the challenges which occur in organization in this generation. The research by (Hamzah, 2025) states that Agile project management involves continuous development and collaboration. The communication between stakeholders is more effective in Agile methodology since it follows Scrum. This paper shows that Agile frameworks are more transparent and productive in managing projects. It states that the daily stand-up call is more effective in discussing the open items and providing solutions to the blocked items. It also follows the Agile manifesto and principles in project management. The research shows that adaptive communication helps to solve minor problems before they become a major concern. This research focuses on future results of using AI AI-driven tool for communication to overcome miscommunication or avoid missing acceptance criteria when it's too long.

Through a detailed analysis, literature review, along with a qualitative and quantitative approach, the author (Gate, 2025) shows that organizations started to use AI in PM, which will shape the future generation by increasing efficiency and help to deliver even complex projects with precision. This has performed a comparative analysis between the traditional approach, hybrid approach, and AI enabled hybrid approach and shows that AI in hybrid project management increases efficiency, accuracy, reduces risk and also increases timeline accuracy. The factors which influence the usage of AI tools and the way the project managers use the AI tools, along with their perception, are analyzed with a 113 responses collected through a survey sent via LinkedIn. It shows that the use of AI assistance, Chatbots, ChatGPT in the project management tool is leveraging the planning, tracking, assigning tasks to resources, along with presentation. The researcher suggests to train the engineering students in their final year to include project management in the curriculum so that it would be helpful for them to adapt once they enter into real corporate

world. This not only helps them to gain knowledge but also reduces the organization's time to explain to them about AI (Aggrawal and Thomas, 2024).

The research by (Rodrigues, 2023) Future of Agile methodology and its implications in IT/software development through an interview with 5 experts with extensive knowledge in project management to provide their vision for the future of PM. It states that the use of AI tools helps teams to concentrate on other priority tasks and also increases their thinking capacity. AI's impact on the automation of repetitive tasks is more. This increases the collaboration with stakeholders, thus reducing miscommunication and improving feedback from customers through AI assistance. When performing the AI integration in PM, the budgeting also needs to be brought into consideration by the organization, along with training the employees.

The study by (Drljača, Tomić and Ris, 2024) compares different models through A comparative analysis helps instructors select a model to train employees. For this desk, research was used with a list of qualitative indicators through which the evaluation and selection of the model is done. This paper compares four models, namely ADDIE, SAMR, Dick&Carey, Merrill's principles of instruction (MPI) and the key indicators compared here include number of phases, scope, goals and objectives, instructional strategies, learner analysis, content analysis, assessment and evaluation, implementation and delivery, development process, and role of the instructor. Depending on these indicators of comparison, it has been concluded that the ADDIE model is the most complete, structured, flexible and easy to implement.

The research by (Maulana Okte and Yelsha Dwi Pasca, 2025) aims to investigate instructional materials for their development, feasibility, and outcome of employees' understanding, which focuses on NDF car topics for CR positions. This paper used R&D as a research method with the ADDIE model comprising analysis, design, development,

implementation and evaluation. For this purpose, it uses documents and e-learning data from the company's CR positions with mentors and PICs as validators. The results obtained from the research show that NDF car topics for CR positions are suitable for use. Thus, the ADDIE model best suits this research as it helps to gather all information and also used for validations.

As per the thesis by (Catabona, 2025) investigates the ADDIE instructional model which consists of analyze, design, development, implementation and evaluation, enhancing the teaching in business, management, and accounting. Using quantitative analysis, a set of questionnaires is prepared to validate the use of the ADDIE instructional model by teachers for their purposes. Participants demonstrated their skills, which are strong across the ADDIE instructional model. The research concludes that the ADDIE model helps teachers in learning, and it should also focus on professionals for collaborative development practices.

2.3 Human Society Theory

The research by (Harris, 2025) shows how to manage risk using strategies which involve AI in PM. Practical case studies in PM using agile and traditional methods are analyzed. The success rate could be enhanced when structured PM are integrated with AI, though it has a few challenges. This paper states that AI can handle the largest amount of data, whether it is structured or unstructured. Project delivery delays, insufficient resources, and overrun of budget are predicted using ML in AI. For example, AI can also reallocate resources when they is required. Virtual assistance and AI chatbots are used to answer queries asked by resources, thus making communication with stakeholders seamless. This paper uses qualitative analysis of data using case studies, LR and analysis for both agile and traditional PM. It also uses secondary sources of data, like reports from various industries and academic-related papers. AI predicts the risk beforehand using predictive

analysis. When a project failure happens, the patterns are analyzed using AI, dependencies are analyzed using ML in AI to determine the risk and bottlenecks, and project failures are analyzed using sentiment analysis. Risk mitigation also involves planning scenarios, intelligent decision-making, and automation. Critical failures are handled when their unusual pattern is noticed before they are escalated. There are a few challenges in implementing AI, which could be handled by having an ethical practice, providing training programs to employees to adapt to AI in PM. AI plays a role in risk management in projects, and it is being expanded further to IoT, blockchain. Organizations will continue to implement AI in PM with a well-trained project manager or a resource to mitigate the risk and handle things. Thus, a feedback loop must be provided to learn from past data to understand the risk assessment models to provide predictive accuracy. Monitoring and Iteration over time improve the use of AI in PM and also improve the future goals, culture and growth of the organization by continuous implementation.

According to (Gupta, 2025) uses case study is used to show how AI is helpful in project management across organization in task automation, collaboration, thus increasing project outcomes. This paper has shown that in early stages, before the introduction of agile methodology, organizations follow the waterfall method, as the name states, it follows a sequential process where one follows the other. This created delays, and there were problems with the client. A method was introduced, Agile, which focused only for a period of generally 2weeks as an iterative development will focusing on sprint sprint-by-sprint manner. This was easy to track the efforts and maintain the workflow and resource allocation. Further, as days pass on this as well creates issues like budget overrun, delay in delivery, etc., and then now AI came into the picture to solve these issues. This paper uses three case studies: one from Alpha Products Corp, California, and second is from Tech Innovations Inc, and the third is from Creative Solutions Ltd. In the first case study, the

organization used an AI tool named “Product Monkey”, which integrates the customer’s feedback, thus helping prioritize the features that need to be developed to satisfy customers, and this also helps to adapt to the changing market environment. In the second case study, it was found that the organization faced a few challenges, like tracking the task, allocating the task. To overcome this, the organization planned to use Jira’s automation to automate repetitive tasks like sprint updates, which in turn reduced the burden by 30% to managers and helped managers to concentrate on another high-priority task. This also helped to detect the risk, and the timeline of delivery is enhanced by 20%. In the third case study, the advertisement agency faced challenges in collaboration, which led to the usage of “Miro” and – assisted feature to help in brainstorming. Mira combines the suggestions into themes and actions, thus increasing the client satisfaction by 40%. This also helped the agency in the marketing field and thus their growth rate was also increased. All these case study shows the use of AI in three different areas and their improvement.

The paper by (Paul, 2025) shows the project management integration with AI for stakeholder collaboration, risk management, along with few challenges in data security, AI bias. Through case studies the adaptation of AI in PM is explained in this research. PM is the pillar of all organization across industries. To adapt to market standards, technology and business needs, methodologies to handle PM were introduced. Traditional methods of PM are not suitable for all levels of PM, so the use of hybrid PM was introduced. The hybrid approach was useful when there was a long-term project, and the teams could maintain their collaboration well. There are limitations like decision making, risk management, when handling complex projects. AI involved PM helps to analyze the risk before it occurs and helps to handle them smoothly. Thus, projects could be delivered on time without delay within the estimated budget. When using traditional PM, there is a delay in identifying the risk as they fully rely on historic data, AI-driven PM flags the risk by

continuous monitoring of projects thus all the bottlenecks could be identified. Workflow optimization, task recommendation, distribution of workload and allocation of resources improve team collaboration. There are additional features like AI chatbots, virtual assistance, which will further improve the collaboration within team members and also increase the efficiency of tracking the progress and task status by project managers. Thus, real-world case studies are used and analysis is made by comparing the traditional PM and AI-driven project management in few aspects like automation, risk, adaptability, resource, data utilization, automation bots and the benefits of hybrid methodology is mentioned as increased efficiency, improved accuracy, risk mitigation and scheduling.

The research by (Das et al., 2025a) uses AI-powered tools like Asana, Jira, and Monday.com to implement AI in PM for improving the efficiency of PM. This paper highlights the limitations of these tools when handling complex projects through quantitative analysis. The project outcomes are improved by real-time tracking of the project progress through predictive analysis, resource allocation. There are a few challenges included, like the data quality, training the skilled resources to handle AI. The study focuses on the role of AI in PM, aiming to increase the efficiency and productivity of PM in the IT industry. The first step in the research process involves identifying the strengths and weaknesses and the performance in the tools, along with the source of data collection and which tool will be suitable to be used for that particular project. The second step is the data processing where the online dataset of Kaggle is used. It includes 12424 issues and 19 types of issues. All these are pre-processed and reorganized to match the status, priority, start date, end date, summary, description, approver, category and impact. In this Asana, Jira and Monday.com are used to categorized and analyze the data and provide the details regarding the task automation, prioritizing the task, resource allocation, which includes their value and observation respectively. This shows that Asana achieves

20% full automation of tasks, Jira shows 49% task completion by managing the dependency and tracking the task and the remaining 51% of tasks need improved prioritization and workflow automation. Monday.com successfully closed 2071 tasks and 1498 as signed off, and additional enhancements could improve the usage of this tool in complex IT projects. The study shows that the usage of these tools, however, increases the efficiency and productivity of projects in IT. They still have a few drawbacks that will hinder their usage to the fullest. However, by comparing these results helps organization to choose right tool depending on the project.

According to (Bhad, 2025) AI is transforming project management by improving efficiency, increasing automation. AI-driven PM is used in both Agile and traditional frameworks. This paper shows AI impact on PM by comparing with Agile methodologies like Scrum and Kanban. The methodology used is LR, comparative analysis and case studies by comparing agile with AI and traditional project management with AI. AI solutions show improvement in resource allocation, risk management, scheduling. All projects have planning, execution and monitoring which is done using AI. In most of the organization project managers deal with multiple projects at a same time so they need to adapt to handle distributed teams and also adapt to changing priorities. AI optimizes sprint planning, team performance tracking and suggest improvements. AI also has the ability to identify the bottlenecks and allocate resources accordingly to improve the efficiency and delivery of project on timely manner. Automation of repetitive task using AI helps in tracking the milestone, ensure that the deliverables are met on time. The most important part of AI which helps project managers is to identify the risk on prior before they even arise. Another important feature of AI is to provide warnings, identify the budget overruns or shortage of resources. Usually, stakeholder communication is made manually on timely manner but now AI makes the task easier so that stakeholders could track the project

progress, status reports and they suggest any changes if required which makes the task easier and also the time spent is reduced. There is also another feature of AI chatbots which helps to solve the queries raised by team members within short span of time thus reducing the project managers time so that they could concentrate on other important tasks. In future the AI will be extended to IoT, blockchain and other related areas also so that organizations could reach high level of innovation and efficiency also will be increased. In order to work on AI related tools project managers should be trained and well-versed in AI technology and also it should be in a well-structured way and process.

According to(Shoushtari Bu-Ali et al., 2024) PM needs more efforts in execution, monitoring. In traditional PM project managers deal with larger datasets, many unseen challenges and also performing repetitive task. This paper as a first step deals with the existing LR of using AI in project management in various aspects like risk management, allocation of resources, budgeting, estimation etc. The second step is to deal with the method of implementing AI in project management for collecting data, selecting the model and training the resources. As a third step it also discusses the challenges/limitation of using AI in PM. As a final step this paper shows the future of AI usage in project management in various fields. During this process the paper states that the usage of AI in project management analyzes the historic data to assign a correct resource for a task and also provide the cost estimation and forecasting for budget. AI provides the early risk analysis by analyzing the vast amount of data so that project managers can take measures to mitigate them before escalation. For communication, AI chatbots and assistants are used to solve queries. Apart from the ones discussed before, AI in project management is also used in areas like stakeholder communication by communicating data to identify stakeholder concerns, monitoring and generating reports based on data collection from various sources. Knowledge on the project is captured from historic data and team

members' experience, thus helping project managers in future project management. The methodology used here is broken down into the following steps of data collection, selecting the model, training the model, evaluating and testing, integration and deployment. Even though AI in project management has many advantages it has its own limitations, like the quality of data, its ability to explain, ethical considerations, and implementation cost. The improvement of using AI in project management is not only theoretical, but it also depends on various numerical data collections to show the project outcomes across various aspects. There could be future research of using AI in project management apart from the areas discussed here, and also investigating the integration of AI with other technologies, like big data, IoT show even more advancements in project management.

The paper (Saadoun and Yaghi, 2025) (Arabic) shows that AI can change and bring improvement in logistics and supply chain management under various industry sectors. In this sector, the use of AI will improve the speed of delivery, efficiency and precision. This study is mainly performed to identify the challenges in logistics in a Saudi telecom company when implementing AI and it uses a qualitative method by literature review. This showed many challenges in implementing AI in logistics, which include organizational issues, environmental issues, economic data and ethical issues. The data collection to this research includes the digital library, journals. Organizational challenges mean the lack of support from top management, environmental challenge includes the change of operational structure and framework changes in the warehouse, economic challenge includes the data setup and license of software used, ethical issues include regulations or policies not used and also the usage of a vast amount of data, which is required to use AI in logistics. The result shows that when AI is implemented correctly in logistics, it will give better results and show improvement, but still, future research is required to understand the areas which are challenging in using AI in logistics. The qualitative method of literature review showed

that there are four obstacles, like the data, AI hardware infrastructure, providing training to employees and societal acceptance. Even though the usage of AI in logistics and supply chain management renders improvement and increases efficiency, it has to be used in a correctly. Thus, this will be a crucial element in economic growth. STC mainly uses two services one is the “shuttle bus service” to provide a solution for shuttle bus industry and other is “Fleet control service” to monitor the process of transportation by fleets where the usage of AI will have a more significant impact and bring more efficiency.

The paper by (Mia, 2025) focuses on risk management by using AI in PM. The risk associated with predictive analysis, automation and decision making is analyzed using AI in project management, which provides early warnings, mitigation measures, and anomaly detection. There are benefits in using AI, such as cost savings, efficiency, but there are a few challenges, like data privacy, vulnerabilities, and ethical dilemmas. There are a few findings which will increase the overall success and reduce uncertainties when AI is integrated with structured risk management. The challenges associated when implementing AI in project management could be reduced when a balanced approach of using AI in project management is followed. Traditional risk management usually depends on historical data and a little involvement of human intervention. However, AI detects the pattern and analyses the risk and provides early warning before the risk is escalated so that project managers can handle them and be aware of this in future. One benefit of using AI in risk management is that it will process all the structured and unstructured large volumes of data required/used for the project. It also analyses the Real-time market, historical data, and market trends. The paper states that using ML, the budget overrun, delay in delivery could also be predicted and thus allocate the resources accordingly. As an organization starts using AI in risk management, the policy updates need to be informed on a regular basis. The future will have continuous advancement of using AI in PM for risk management

through Gen AI and explainable AI (XAI). This will allow project managers to learn and understand more things about AI, which provides the solution more easily. The transparency of AI allows project managers to identify other risk scenarios by using Gen AI. The data collection in this paper uses both primary and secondary sources, like the academics, LR, and case studies. Further investigation in risk management helps organizations to improve and increase the efficiency in delivery and handling complex projects by project managers.

According to (Sobchenko et al., 2024) shows that the use of AI and its effect during emergencies. This paper uses perception-based analysis with theoretical, structured, opinion-based questionnaires using AI tools. The research involved 96 engineers from civil and military organizations. There are a few similarities in the hindrance in engineering PM, traditional PM, Agile and hybrid approach. The paper used 25 AI tools to investigate the success of the project by explaining its impact and components. There is a limitation in using AI based on perception-based analysis, which hinders the full evaluation of AI usage. The evaluation involves quantitative and qualitative analysis, where the first one involves measurement and the second one considers the quality of the decision. From the 96 participants involved in the research, the split is as follows,

- 3.1% - System Engineers
- 4.2% - Data Engineers
- 15.6% - Mechanical Engineers
- 11.5% - Civil Engineers
- 14.6% - Electrical Engineers
- 7.3% - Industrial Engineers
- 13.5% - Military Engineers
- 12.5% - Research Engineers

- 17.7% - Engineering Educators

This study was performed between 2023-2204 in three different regions of Ukraine. The result states there are ten challenges during emergencies, and also states that traditional project management is less flexible than others, thus AI improves efficiency.

The research by (Chmielarz and Sołtysik-Piorunkiewicz, 2024) Compares expert opinions to find the differences in IT project management. The methodology is used in a theoretical and research approach. The procedure in this research involves five steps of literature analysis related to project management, a Pilot version of question testing, a survey is conducted to collect data, comparative analysis, and recommendations are made for evaluation. This involves 86 experts to answer those questions for the survey, which consists of three sections. The results from this survey help further educators and also those who are practitioners in business.

According to (Brahmandam and Chandramohan, 2024) all financial organizations are facing rapid pressure to fasten their development cycle and to be compliant. This research examines the change from waterfall to other hybrid models. There are a few challenges mentioned in this study, like management buy-in, training of resources, and pilot projects as per the case study. The methodology used in this paper is a case study with qualitative LR. The demands for compliance in project management are satisfied using a combination of lean-agile and regulatory controls. In this fast-forwarding market, the way for innovation is built using this hybrid architecture, which improves the delivery and feedback system. All the research for this paper is carried out using the financial industry. There are three steps followed in the methodology of which the first step is approaching LR where Google scholar, IEEE and ACM digital library papers are examined additional to financial industry papers, second step is to do a case study on papers published by

consulting firms, financial institution which uses hybrid methodology, third step is to analyze the data by identifying the patterns from the case study and LR.

The research by (Mbarek, 2025) Shows that an organization's growth depends on innovation, the team's performance and also success in the project. This paper explores the leadership role in PM, methodologies used in PM and the integration of AI in PM. As organizations are moving towards innovation and focusing on growth, the style in handling projects by leaders varies, which becomes the key factor in collaboration. Additionally, the use of agile methodologies and AI usage has still made leadership changes thus reshaping it. A few case studies from PayPal, Amazon, Tesla and many more corporate firms are used to identify the use of hybrid PM along with the role of leadership. A qualitative approach to research methodology is used in this paper. The approach used by leaders usually stands as a bridge between the theory and practical application, through which the success of the project is achieved. Leadership from Tesla focuses on electric vehicles, leadership from Amazon focuses on the retail market and cloud service, and PayPal focuses on the digital market. A comparative analysis is made for all these organizations from 2020 to 2025 for their leadership changes, what are the success factors, how challenges are faced and handled and finally the results produced from the approach. The paper also showed another table comparing agile and its success rate along with ROI. In every organization, managers usually focus on task completion, whereas leaders focus on vision. This paper states that managers focus on task, efficiency, rules, performance, avoiding risk, cost control, and leadership focuses on vision, collaboration, empowerment, innovation, inspiration and growth. The focus on managers is delivery whereas leadership always focus on growth and steps taken to increase the growth.

According to (Cherif, 2025) a TDAMR methodology is used along with AI in project management. It uses a hybrid approach with tri-weekly sessions with quantitative

decisions whereas traditional agile has few struggles. This methodology has three stages one is resource allocation and development days are specified on Monday, Thursday and Friday second is bi-weekly decisions for performance and risk analysis third is adaptive planning to handle uncertain situations. The quantitative metrics includes performance, risk and client satisfaction. TDAMR could resolve challenges like resource allocation, risk management, collaboration. This paper shows the detailed report of the framework and also areas need to be focused for future research by inculcating with real-world scenarios. The methodology has the following steps as mentioned below,

- A. Core framework components - focus on operational efficiency and strategies
- B. Tri-day focus workflow - enhanced flow state optimization, continuous task progression, knowledge integration mechanism
- C. Decision Gate framework – For AI optimized decision architecture, adaptive threshold system
- D. Quantitative performance metrics – Includes enhanced metrics foundation and AI specific metric integration
- E. Continuous progression integration – Includes asynchronous monitoring architecture, early warning system,
- F. AI development lifecycle integration – For enhance lifecycle management
- G. Implementation framework – Role optimization

Thus, TDAMR approach could be used as a standard approach across organizations in order to overcome the challenges using AI in project management.

The research by (Shiribaiev, 2024) shows the effect of AI in project management in areas like resource allocation, efficiency, decision making. The research used current project management and the needs of future project management to structure the use of AI in project management which will address the challenges faced in project management.

Agile project management breaks the project into small pieces to handle on sprint bases. This paper analyses the key features of AI in project management which could be used to improve the success rate of a project. Predictive analytics by using ML helps to analyze the past historic data to identify the bottlenecks and provide suggestions. Risk assessment and mitigation are done by analyzing the vast amount of data by AI which will show up the probabilities of risk. Resource optimization is done by analyzing the current project requirements and also the past project data according to which the resources are allocated to the respective task/PBI which reduces the project managers time. Automated documentation helps to reduce the 15hrs of work time for managers per week as shown by studies. Resource leveling is to reduce the over burden of a specific resource and make all the task to be split up between the resources effectively. Automated reports help in collaboration with stakeholders more effectively rather than spending extra time to explain everything in detail. The case study includes the IBM's Watson project management implementation and also Google's project scaling using AI. It states that initially IBM's project managers were in a concern that this could replace them but later the adoption rate was increased by 85% by using a specific approach and training programs. Google focused on complex projects with 92% accuracy 28% resource allocation. This paper explains the use of AI in project management by overcoming the challenges faced during implementation of AI. This improves the efficiency by reducing the time spent of administrative task by project managers so that project managers can focus more on the required task. This will not replace the job of project managers rather it will help project managers to reduce their manual effort.

This paper (Esther, 2025) shows the usage of AI in threat intelligence system by incorporating deep learning, AI with hybrid model. The performance of the framework is evaluated based on real time data that are encrypted along with attack scenarios. The

accuracy in detecting the threat rate is more with the use of AI in the digital ecosystem. For encrypted platforms using hybrid AI methodologies the automated threat intelligence system is built. It adopts a framework by combining symbolic reasoning, deep learning, knowledge-based threat modeling. It processes the encrypted data, identify the threat and the reports are created without decrypting any of the data. It has three modules; the first module is behavioral inference engine which identifies anomalous communication pattern using deep learning on encrypted metadata and stacked long short-term memory network. The second module is symbolic reasoning engine which uses a logic programming to identify anomalies with threat pattern along with the usage of cyber threat indicators. The third module is synthesis layer which combines the output of the first two modules which is behavioral and synthesis module which uses a graph representation between the threat behaviors to generate a threat report. The datasets used are from anonymized encrypted platform. The results show a 93.6% accuracy on threat scenarios, 87.2% on deep learning models, 81.4% on symbolic system. Qualitative analysis helped the cybersecurity analyst to sequence the anomalous threats based on graphs. There were few challenges identified one of which is to balance the symbolic and behavioral engine by tuning the integration layer and the other is to maintain the knowledge base. In future when the research continues it needs to consider the privacy in order to avoid the misuse of data. The research provides path for cybersecurity in the digital environment. There needs to be a future work for distributed model.

According to (Cui, 2025) quantitative analysis method and data from 248 professionals using ANOVA via SPSS shows that integration of AI in project management increases the success rate. This shows that the agile methodology will be more significant in increasing the success rate. These results help the organization in their project delivery by analyzing the gap in the agile project management in organization. The data collected

from 248 professionals are analyzed using statistical method to provide insights to the project managers within the organization. Enterprise agile project management has four core dimensions like Iterative delivery, Adaptive planning, collaborative orientation, continuous improvement. Human-AI interaction has three-dimensional construct like task allocation, decision synchronization, knowledge integration. Project success has three dimensions like efficiency, impact, sustainability. Hypotheses development framework has four stages where stage one deals with the relationship between agile and project outcome, stage two shows the collaboration of human-AI interaction with projects, stage three proposes to success of project, stage four plays key mechanism where project success depends on agile methodology. The survey to collect data was through online platforms and social media networks. This paper shows that specific agile practices need to be selected for project in order to increase the success rate. Though the agile methodology shapes PM across organization according to this paper future research should be conducted to evaluate how the complex projects selects the combination of agile and human AI. The participants targeted for this research are industry professionals working across multiple industries as project managers and those who play the roles of handling multiple projects within the organization. Usually, the success rate of a project decides the growth rate of a organization as well as its employees.

As per (Bakkiyaraj Kanthimathi Malamuthu et al., 2025) explainable AI based framework is used along with deep learning techniques to ensure the trust in the critical and evolving innovative environment. It is used across various industries like healthcare, finance, auditing and cybersecurity by integrating LRP (Layer-wise relevance propagation), SHAP (Shapley additive explanations), CNN (convolutional neural network) for worldwide interpretation and decision making. It has 94.3% accuracy, 93.6% FI-score and 91.8% precision. By using the Explainable-AI the results fetched shows that increases

the confidence and maintains the compliance rules across users and also performance reached a peak. This framework has three components namely Deep learning extractor, rule-based reasoning layer, Explainability engine. The deep learning component is to extract the feature hierarchy using CNN, rule-based component uses Explainability along with the rules fetched from Apriority algorithm, Explainability engine component integrates SHAP. As a result, trustworthiness score (TR Score) is measured as 92.1%.

The research by (Olmstead, 2024) states that due to the increasing complexity in IT projects the quality assurance is not taken care up to the mark to identify the bugs or performance issues before released to production. To overcome this, the paper highlights the use of AI by combining hybrid testing model to identify the performance issues and defects before the production environment. It also uses static analytics and dynamic testing where static analytics provides the structure of the code and dynamic testing is used to test run-time behavior of a software or a product. The time and resource utilization for QA is reduced by using AI along with ML algorithms which identified the pattern of execution and defect data from the past. Due to this framework the challenges in modern SDLC could also be identified and sorted out. The results are found from the application of framework in real-time software. This paper needs future research with vast dataset, CI-CD pipeline usage and more usage of Explainable AI techniques.

The paper (R. Thiyagarajan et al., 2025) uses AI along with Digital Twin technology to improve the efficiency and increases security in Internet of Things networks. The behavior and potential threats are analyzed using Digital Twins framework along with AI. The security breach is prevented by detecting vulnerabilities at the early stage by integrating hybrid model and Digital Twin framework. This framework uses a real-time environment for threat mitigation. The results show an increase in 17% efficiency 20% response time and reduction in false threat detection by 15%. The following components

are used in the framework – Real-time data acquisition, threat detection algorithm, Digital Twin models and predictive analytics. These are gathered using LR and case studied. This research needs a future work to allocate resources to vast range of IoT environment. There is an automated-response with simulated data from Digital Twin framework model. Whenever an anomaly is detected, the automated response is triggered and also the AI system will optimize based on the past decision's feedback. It detects threats like Denial-of-service, Distributed Denial-of-service etc. with an accuracy up to 95% when comparing to the traditional and old threat detection methods where only 80-85% accuracy of threat detection was found. Though, the paper has all the benefits it also requires a future work to arrange things and make the resources adapt to this framework along with training and allocation of resources.

According to (Bengani, 2025) the efficiency, scalability of AI could be improved with the use of LLMs (Large Language Models) and ML (Machine Learning) along with the use of hybrid AI. With less cost the traditional MLs are integrated with LLMs. The efficiency is increased and still the performance is maintained as per standard by using model compression technique. Hybrid AI is used only across specific domains and the classical MLs are used in areas like Law, medicine and Finance. By combining these methodologies, the efficiency and accuracy could be improved. In the methodology of Machine Learning Model, it includes Support Vector Machine, Random Forest, Bayesian Model and Deep Learning model includes transformer-based model, Convolutional neural network, Recurrent neural network and long short-term memory. The datasets are collected using the below reference,

- Textual Data – Common Crawl, Wikipedia, Custom domain specific dataset
- Structure Data – UCI Machine Learning repository and Kaggle datasets
- Sensor and Visual Data – ImageNet, MS COCO and DEEP

- Data Fusion – Concatenation and Canonical Correlation Analysis

Hybrid Fine tuning, Pruning and Quantization for model compression, Ensemble methods are used as algorithms for AI. This paper also requires future research in developing AI that adapts to new data streams, to build trust using Explainable AI, cross modal integration, AI standards to figure out the privacy, accountability, security, transparency etc., Collaboration between different research groups, fetch data from text, speech and visuals as well. The traditional ML and deep learning are combined to improve the efficiency and performance across industry continuous monitoring and development. This is helpful across domains like law, healthcare and finance as mentioned in this research paper.

According to (Md Fokrul Islam Khan, 2025) April 2021 was the official date on which AI act was introduced. This was introduced to safeguard public and to maintain the rights by following certain regulations as per Artificial Intelligence Act by European Union. As a result, a risk-based approach is followed across the legislation as per the rules provided by the Act. Thus, European Union stands as a leader for ethical AI which sets as an example to other parts of the world. This paper analyses the Article 9 rules by following a four-method process of literal, systematic, teleological and historical in order to explain the Article 9's scope and purpose to the globe which helps when proceeding an research either for an organization or as an individual and also provides few recommendations on its uses. The regulatory system of AI act can ban a high-risk AI system to bring safety across individuals and also allows the rest low-risk systems to operate based on certain rules and regulations. The main purpose of this act is to make the market smooth by introducing a legal system which is uniform across EU. This will bring an awareness and clarity society and also protects society. These regulations will make public to believe in AI and also builds trust on AI usage. There are few AI systems which has “unacceptable

risk” and they are prone to cause problems so, as per the regulations these systems which harm the users are prohibited. This Article 9 also states that the AI systems which has high-risk should have a risk management system and as per Article 3 their providers should take up the responsibility for introducing them to the market. There are also special rules introduced as per the article when it comes to the usage with children and credit institutions which need to follow few protocols related to credit. Overall, this paper states that the purpose of AI Act is to introduce AI to society in a structured and along with the risk management system and also to focus on AI systems which are prone to high-risk and affects the health and safety.

The research by (Acka, 2024) shows how AI is integrated into work and also how to manage AI project with high success rate. Unique contents of text, image, coding is generated by ML which is integrated into Generative AI. Project managers when handling a project face lots of problems like the risk, escalations, high priority task on top of which team management also consumes time, in order to help project managers focus on risk and high priority task Generative AI would be useful to handle the rest of the project things which is explained in this research paper. Few organizations started using AI but it is not reached till end and it is just the beginning stage and more ways to go on. This paper states that even employees need to be trained to handle such technology in an effective way to reduce human time because employees having AI skills are many but PMI states only 18% have practical experience. Gen AI will produce unstructured data from which the patterns could be identified and new data is produced and also it has the multi-tasking ability. Mckinsey, also proved that Generative AI has the ability to make 60%-70% of the project manager’s work in an effective way. There are three aspects in the PMI project triangle as way of working, power skills and Business Acumen in three different domains of automation, assistance and augmentation. Gen AI has its own benefits in project planning,

task management, resource allocation, risk management and monitoring. The Gen AI tools include ChatGPT, MS copilot, Bard with software like Click up, Monday.com etc. There are also few risks in using AI in PM which are quality of data, lack of human involvement in judging, stability of performance and also finance based risks to handle by the organization. This paper also states that the use of Gen AI in project management has to be followed with the care like the accuracy, quality and safety as there is no guarantee for our personal or sensitive information and it also states to avoid uploading of any data which are firm confidential or sensitive data.

According to (Vyhmeister and Castane, 2025) the use of AI in manufacturing seems to be industry 4.0 however, to move towards industry 5.0 the human centric dimension need to be used for development and deployment process where ethical considerations should be made along with the existing standards. To help figure out things in manufacturing the TAI-PRM framework is developed along with failure mode and effect analysis (FMEA) method. This framework tells us that there are few hazards which impacts the system and also this framework suggests the tools and metrics to avoid this risk. It was implemented in EU project for manufacturing and the results shows that the AI tracks the various failure modes and helps to manage this risk by enabling ethical considerations into risk management system. The following are the reasons which FMEA method was chosen in the TAI-PRM framework and they are holistic approach, Identifying the hazards, systematic approach, continuous improvement. The steps involved are analysis, development of worksheet, failure mode identification, identify the method, ranking and reporting. There are few considerations which needs to be considered in TAI-PRM approach as it aligns to ISO3100 and they are risk architecture, strategy and protocols for risk (RASP approach). There will be continuous execution of the flowchart and the execution begins only when any one of the criteria is met such as initial AI design, addition

of artifact to system architecture, component modification, data structure changes, API modifications, new functionalities, regulation modification and context changes where AI is deployed. The FMEA methodology has four Ts involved in risk management as Treatment, Transfer, Tolerance, Terminate. TAI-PRM serves as a guide to follow the regulations and consideration in risk management to maintain a standard risk management approach.

According to (Basani, 2025) quality of data is important. Traditional data quality management is time consuming and also requires more manual work by employees. So, to overcome this AI is used to improve the quality, accuracy and completeness of the data through integration of AI in data bricks via a novel framework. The AI integration in data bricks corrects the missing values and finds out the anomalies through the natural language commands used thus reducing manual efforts. This was compared with the already existing data tools like the Ataccama ONE informatica data quality tool, IBM infosphere quality stage, Talend data quality. The integration of AI in data bricks uses three methods of monitor, validate and improve data quality. The key items focused in this paper are accuracy, time, completeness and consistency by defining and evaluating them quantitatively and then integrating into data bricks to construct the system for managing the data quality. There are separate metrics for all these four key items mentioned above. There are three methods as mentioned below,

Method1: Natural Language discussion with SODA GPT.

Method2: Databricks and Azure Data Quality framework.

Method3: Customized Large Language Model for Interactive Quality Checks.

The setup of the environment is made on a data brick which is having both standard and high memory nodes along with the specifications like run-time, driver node, worker node, total cluster capacity and storage layer for intensive and accurate quality metrics

calculations. The protocol evaluation consists of quality, checking the threshold, remediation, re-evaluation. This framework has increased by 9.4% accuracy, 7.78% completeness, 9.09% timeliness and also it proved that the framework is effective to be used in data bricks along with Generative AI.

This paper (Ojika et al., 2025) shows that organizations started using AI for multiple purposes. It uses a framework with novel framework with NLP and Tensor flow to automate the workflow. Traditionally used knowledge management system lags in areas like decision making, reduction in productivity, use of unstructured data and informal workflows. These challenges are addressed by involving NLP in Tensor flow's ML through semantic search and extraction of knowledge. The uses the data from various sources like the emails, reports and data bases available using NLP. These contents are then classified, recognized and prioritized using Tensor flow's model. Additionally, the repetitive tasks are also identified and automated using predictive analysis. Thus, the manual effort for project managers is reduced and the time is utilized for priority task and team collaboration. The use of this in a recognized organization showed a reduction of 28% in delay of works and increase of 35% in retrieval of knowledge through a case study. This is useful in all growing industry for knowledge management which brings growth withing the organization and also improves its productivity. This paper used a PRISMA method along with the NLP and Tensor flow in AI. It also used IEEE, Google scholar papers from 2021 to 2025 by using terminology like "AI driven KS", "Workflow Automation", "NLP", "Tensor Flow model" and found 4712 records which further after removal of duplicates became 642 records among which 187 were full texts and 74 used for final research. There are few metrics which are important which includes latency, retrieval time, response time and finally customer satisfaction. There could be future research required for this paper to integrate it

across various organizations for video, audio and image as well and also when data privacy is required there should be a learning to train the models for effective usage.

The paper by (Omoruyi, 2025) uses a survey among project manager's in Nigeria which shows that 79.2% of them use Agile and 81.2% are planning to use Agile methodology. It also uses a descriptive analysis and states that the Agile methodology helps to track the development progress, better collaboration with team, efficiency. In Nigeria various sectors like healthcare, banking, utilities, e-commerce, telecomm have started using Agile as a project management method. It used (SPSS) statistical package for social service to analyze the collected data. As per (Islam Anika, no date) compares traditional project management and Agile project management and concludes that Agile methodology could be used in projects where there is requirement changes by stakeholders whereas, traditional project management is used for a ideal project when there is no change required. This paper explains how the initialization phase is handled by project manger's. Thus project manager should balance a project by having a good understanding of the scope of the project, resources, cost and budgetting and also quality of the project.

Analysis of Click up tool from previous research:

According to (Lalovic, 2023) (Serbian) Clickup tool serves as the powerful software to handle large IT projects. This paper shows optimization of resources, workspace creation, list, tasks, tracking and time estimation. In this fast moving corporate resources and time are two key factors to be considered for a project success. The efficiency, productivity are increased by considering two precious things namely resource and time. Among the most popular project management tools like Asana, MS Project, Scoro, Proof hub, Citrix podio, Workzone, Notion, Exists, Basecamp, this author chooses Clickup as the project management tool due to few reasons like it is affordable abd available within few euros with free versions. It also has important option like to add

multiple roles like admin, owner, user, guest. Each of which has its own responsibilities and privileges which varies as per the roles assigned. As it provides all details needed for the project it is useful for long projects with longer deadline and also with large number of participants. The owner has the access to create the own workspace according to the needs and project use. The author concludes with all the above as clickup is best suited PM tool even for beginners to have hands on using this tool as it is easier to work, handle and maintain.

The Research by (Regragui and Osmano lu, 2025) uses the Optical Character Recognition (OCR) along with Open AI and Clickup to process the document majorily in consulting firms. The text present in the document is scanned using Google cloud OCR and the scanned data is stored in click up using click up CRM. This process helps to human errors, consumption time thus providing efficient way to process the document. In short this is termed as OOC (OCR-OpenAI-Click Up). The contribution of the three are as follows, the OCR is used to transform the data in the document into a format which is editable and searchable, the OpenAI's GPT 3.5 is to extract the key details which will be used for further processing, the Click Up integration provides a efficient and a structured management of workflow. The Json file with the service account credentials are obtained from google cloud. The text is extracted using Google OCR and then it is transmitted to ChatGPT with the Open AI's ChatGPT turbo 3.5 with an API. Once the required data is received it is integrated with the CRM of Click Up to store the received data. The key data which is used for visual purpose is displayed in the Click Up for productivity and easy management. Thus, the error is reduced and also the processing time is reduced. The Author has collected 50 documents and analyzed the processing time and accuracy and it was concluded to have a processing time of 4.7134 seconds with accuracy rate of 88%. This shows the extraction of key feature text from the document mainly for auditing,

consulting purpose which reduces the manual effort and time. Thus, recommending the use of Click Up tool for project management purpose for all activities involved in project management with the process of text extraction from the document as shown in below figure-1.

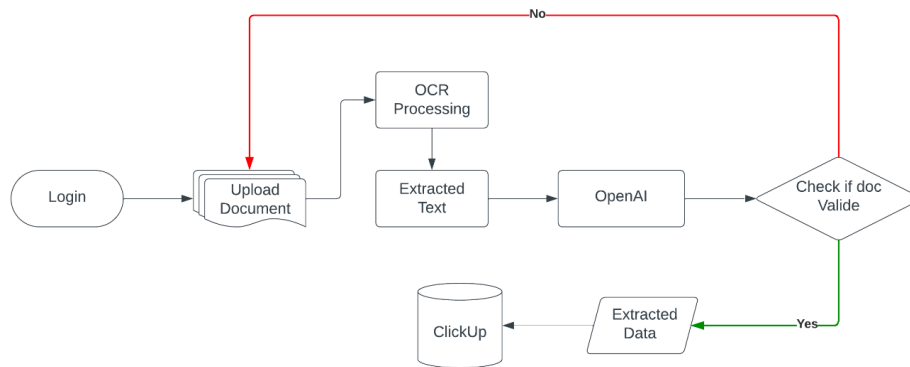


Figure- 1: OOC (OCR-OpenAI-Click Up) for processing text from document

2.4 Summary

The literature review showed the various frameworks using AI in project management to reduce the manual effort and also to increase the productivity of the project. This includes the project management work like decision making, resource allocation, task assignment, risk management and planning and also improves the internal communication. Various papers proved the mitigation of risk through use of AI before it is escalated or identified which avoids the damage caused to the project delivery and reduces the delay in delivery of the project by project manager's. Though the papers lag in providing training to employees or project manager's to handle PM through AI in an effective way it reduces the manual intervention and manual time taken for all the process.

A special attention gathered to the papers which uses AI to improve the quality of data used in the project using AI in multiple ways like incorporating NLP, ML. Most of

the literature review are from Research Gate and Google Scholar within a span of 2020-2025 to be more precise in the implementation of AI in PM and its current effects. A section of review holds its place in XAI which is helpful to maintain the trust and transparency across the projects. The review also analyses various frameworks and methods using PRISMA, predictive analysis and comprehensive analysis for managing a project from planning to decision making. Throughout the review few gaps are identified like the safety of data, proper training to employees/ framework by organizations to provide training to project manager's requiring a enhanced research thus bridging gap between stakeholder communication. The review shows no evidences on how to make quality assurance team to be more effective and reduce the burden for their workflow in any ways like either bug tracking/logging which in turn helps to identify the loop holes. Thus solving the loop holes and reducing the bug count improves the quality of the product and growth to organization by completing the work without hurdles and developing the product on estimated time.

Project management, being a key activity across each organization it plays a vital role in the delivery of the project within the estimated time with a high-quality product. Among various PM tools available, the thesis uses the ClickUp tool due to its features and advantages over other tools, which are discussed with an analysis. This tool also has an AI Assitant for more effective usage. Each process in project management is automated using appropriate automation queries, which is detailed in the results section. Thus, the product owner takes the responsibility to check for burndown updates, which is also seen here using the appropriate prompts along with the timesheet details for the task and assignee. Automation reduces the manual efforts taken by project managers along with human-prone errors, thus making the management process easier and increasing the stakeholder confidence, growth. The team can further receive emails of each update of their task and other details on the board by configuring the respective email.

CHAPTER III: METHODOLOGY

3.1 Overview of the Research Problem

As we all know that project management plays a vital role within all organizations across the globe as it helps in delivering the project on estimated time and the project manager's play a key role in managing the project. The research performed on the thesis is the impact of Artificial Intelligence in project management and how to train the project manager's or employees to adapt to the usage of Artificial Intelligence in project management. It is understood that many organizations which follow agile methodology or any project management methodology has a spill over of PBIs to next sprint and also estimation, resource allocations, test cases preparation by QA etc. requires manual efforts. To address this issue this study uses a hybrid approach in agile methodology with AI enabled software with automation queries and prompts using AI to automate and make project management smoother with increased productivity and reduce the manual effort. This research work also provides the framework to organization on how to train project manager's to adapt to Artificial Intelligence enabled project management tool.

The thesis uses a mixed research method (qualitative and quantitative) by sending survey via google forms to group of professionals in corporate industry working in different domains to collect information on how project management works without Artificial Intelligence and its challenges, how Artificial Intelligence integrated project management works and its benefits along with challenges with a long-term view. A literature review is a performed to understand the implementation of AI in project management across organizations either with hybrid methodology or with any of the methodology using agile and then a comparative analysis is done with exsisting traditional project management method and Artificial Intelligence enabled project management. An AI enabled PM tool is

used to show the process of project management which could be automated and the time which is reduced using the AI tool. This involves the planning, resource allocation, task creation, closure, stakeholder communication etc. using the AI enabled PM tool.

3.2 Operationalization of Theoretical Constructs

The research work focus on hybrid model with mixed research method (qualitative and quantitative) through a survey to two different set of people and a literature review to do comparison between traditional project management and AI enabled project management. The thesis uses mixed research method (qualitative and quantitative) in order to easily understand the stakeholder expectation which is crucial and important to deliver the projects based on stakeholder's requirement and to uncover the reasons for the delay in project, communication gap, tracking the progress, process followed by QA and also it provides the contexts which could not be achieved only using quantitative research. Through this the team members interaction could be analyzed to understand their workflow and pattern and also helps in analysing the failure and success steps from previous implementation which is more important to bring a progress in the project delivery and to attain success without delay. Qualitative methods provides answers to “why” and “how” from a project outcome in a project management through which analysis and comparison will be easy along with analysis of textual data whereas, quantitative method helps in measuring “what” and “how often” through which there is a gap to understand how things operate, why there is a delay in delivery, difficult to do root cause analysis and comeup with a solution to handle the failures hence, mixed research method (qualitative and quantitative) is used in the thesis.

The thesis uses two different types of survey one is to figure out the backlogs and planning activities of project management without using AI and other is to gather insights of the usage of AI in project management and its benefits along with areas it occupied. A

literature review is performed by gathering informations on organization using AI for project management and how it works along with challenges. Further more a comparative analysis is performed by comparing few areas in project management using a traditional approach and an AI integrated approach along with the benefits to project managers. The findings are applied using a AI enabled project management tool using automated process to reduce the manual efforts for project manager's by providing a framework to organization to train them in a stepwise process to improve the project management process in a better way to deliver the projects on time as per stakeholder's expectation.

Mixed research method (qualitative and quantitative) helps to understand and gather information more easily. It can also produce new theories by answering the insights. For, few survey question qualitative research helps scholar to understand the context with deep and fully explained description about a certain area which helps in understanding the topic of study or underlying problem in that specific topic. Moreover, AI tools could be used along with qualitative research to understand the complex environment under study with the provided summary. For, few survey question quantitative research is used as it adds more data to statistics for research.

Project Management using Traditional Methodology through Manual Efforts:

Few research papers where project management doesn't use any AI but uses software to manage projects either with traditional methodology or with Agile methodology states that it is time consuming process for project manager's as it involves more manual efforts. Traditional project management is a sequential method which involves planning, documentation and each phase needs to be completed before starting the next phase. All these studies proves that Agile methodology is more effective when compared to traditional project as the agile follows scrum approach which involves planning, retrospective, review where product owner along with scrum master will be

available to clear the blocks for the team and also provide smooth stakeholder communication which leads to better delivery of project. Since it follows scrum all the task are provided under the scrum board which will be easy to track.

The below are faced by traditional method of project management as discussed through the study, which is handled in Agile project management in the thesis,

- As the requirements changes it is difficult to adapt to the changes as it follows structured approach.
- The “tunnel effect” between stakeholder and project manager causes misunderstanding of the requirements and lack of feedback.
- Traditional methodology is based on documentation from end to end.
- The progress is difficult to track in complex projects as traditional methods fail to use a proper project management tool.
- The scope of the project usually overruns beyond the planned ones which is difficult to handle.
- For complex projects traditional method struggles in co-ordination.

These challenges are overcome by Agile based project management and which is also not free from challenges. Agile project management also has few challenges when compared to traditional approach.

Project Management using Agile Methodology through Manual Efforts:

Though Agile project management is a better approach as compared to traditional methodology and it is a structured process to track the progress using software it has its own challenges. From the collective literature review analysis it is understood that though project management using Agile methodology has lots of benefits it lags in few areas which leads to delay in delivery and consumes more of the project manager’s time and it needs to be taken care with the integration of AI in PM in the thesis. They are as mentioned below,

- Descriptions are not fully provided either in user story or as acceptance criteria.
- Lack of communication as it requires manual efforts everytime to communicate things to stakeholder which leads delay and as a result deadlines are missed.
- As the scrum team relies more on either meeting or emails lead to missed conversation in case of unattended meetings and also if there are long chats in email it might be missed out.
- There is no proper documentation pattern as it requires more manual tracking process.
- Lack of consistency in the process like missed to close DEV task once it is done makes team members to face more challenges and also it delays the progress.

Project Management using Artificial Intelligence in Agile Project Methodology:

The results of 57 papers and literature review of 41 papers, mainly between 2020 to 2025, are used in the research to analyse the use of AI in project management. A final comparative analysis was also performed with these collected inputs to show the benefits of the AI usage in project management in a simple and understandable format to the users. All these papers shows that in order to overcome the challenges faced above, the Agile project management integrates project management with Artificial Intelligence. This not only helps to overcome the challenges but also helps project managers to reduce their manual efforts and improve productivity. It shows that the AI integration in project management increases the communication between stakeholders using AI assistance. The status of the task is also tracked with AI, whether its DEV task or QA task thus reducing the manual tracking effort. The reports are also tracked by using AI and triggered to project manager's depending on the tool used for project management. A right tool need to be selected to manage things and meet the deadlines on time. Thus, the project manager could

concentrate on other priority items and increase the team coordination, as a result, the growth of the organization also increases.

Different functionalities of Agile project management and AI enabled project management:

The below table-1 provides the behavior of each functionalities between project management using Agile and Artificial Intelligence.

Table- 1: Functionality of Agile and AI-enabled Project Management

Functionality	Agile Project Management	AI enabled Project Management
Methodologies	Agile Method	Uses existing method or develop new methods with AI integration
Decision – Making	Project Manager’s involve in manual process through discussion	Reviews large amount of data and provides information
Data Analysis	Uses reports and spreadsheets to identify the trends through human intervention	Through ML it identifies the pattern and predict the outcome
Tracking	Project Manager’s manually track each and every task on the board	AI is used to track the progress of each task
Flexibility	Agile adapts to changing requirements	AI adapts to change

Resource Allocation	Project manager's or PO assign the task manually	Resources are allocated based on the previous sprint
Task Closure	DEV and QA manually closes the task on the board once it is done	Need to perform automation

3.3 Research Purpose and Questions

- I. The purpose of the thesis is as mentioned below,
 - The main purpose of the thesis is to automate repetitive tasks in project management using an AI-enabled project management tool, which is performed by project managers to reduce the manual efforts, time and human errors. The tool automates repetitive task like planning, create task/sub-task, resource allocation, status updates, tracking the progress, burndown charts, virtual assistance, email triggering for all updates, testcase creation for quality assurance team via prompts, risk management, automated reporting, stakeholder satisfaction and also includes visualization maps to provide the overall roadmap of that particular sprint to the entire team members. If AI is used in project management, it will reduce the project manager's time, bring stakeholder satisfaction, and improve efficiency.
 - The thesis also aims to improve the quality of the product by implementing AI in the quality assurance team for work like bug logging, testcase creation, and tracking of bugs. It focuses on a hybrid model, which is a combination of the top-down approach and bottom-up approach in Agile methodology, along with the use of AI in a project management tool. Any number of automations could be added to the board based on the usage by project manager's.

- The thesis focuses on providing training to resources based on the ADDIE instructional model in a step-by-step process so that resources can work on Artificial Intelligence-enabled project management. The stakeholder satisfaction also plays a key role when an AI-enabled tool for project management is used, and it needs to be communicated to the stakeholders from the end-to-end process of the implementation plan and testing plan, which makes things feasible and avoids being misled from the track and delivered on time. Every time, project managers have to present the progress to leadership and stakeholders to keep them on track with the product.

II. The research questions of the thesis are as below,

- RQ1: How to analyze Product Backlog Items (PBIs) during a sprint, using AI tools in project management, which will reduce the manual efforts for project managers?
- RQ2: How to improve the quality of the project by implementing AI by the quality assurance team?
- RQ3: How to train employees in an organization in Artificial Intelligence to handle the AI enabled project management tool?

3.4 Research Design

The term project management in the research work refers to structured application of required tools, techniques, methodologies for processing and developing the project with agile framework. The research work adopts the principles of project management for evaluating the sprint activities and assessing the AI enabled tools for improving the efficiency along with performance. Deep down it involves refining the backlog items in a sprint and measuring the performance.

The thesis uses a hybrid model which is the combination of top-down approach and bottom-up approach along with Agile methodology which follows a scrum framework. This

includes planning of the PBIs till closure of the PBI including quality assurance task and stakeholder communication.

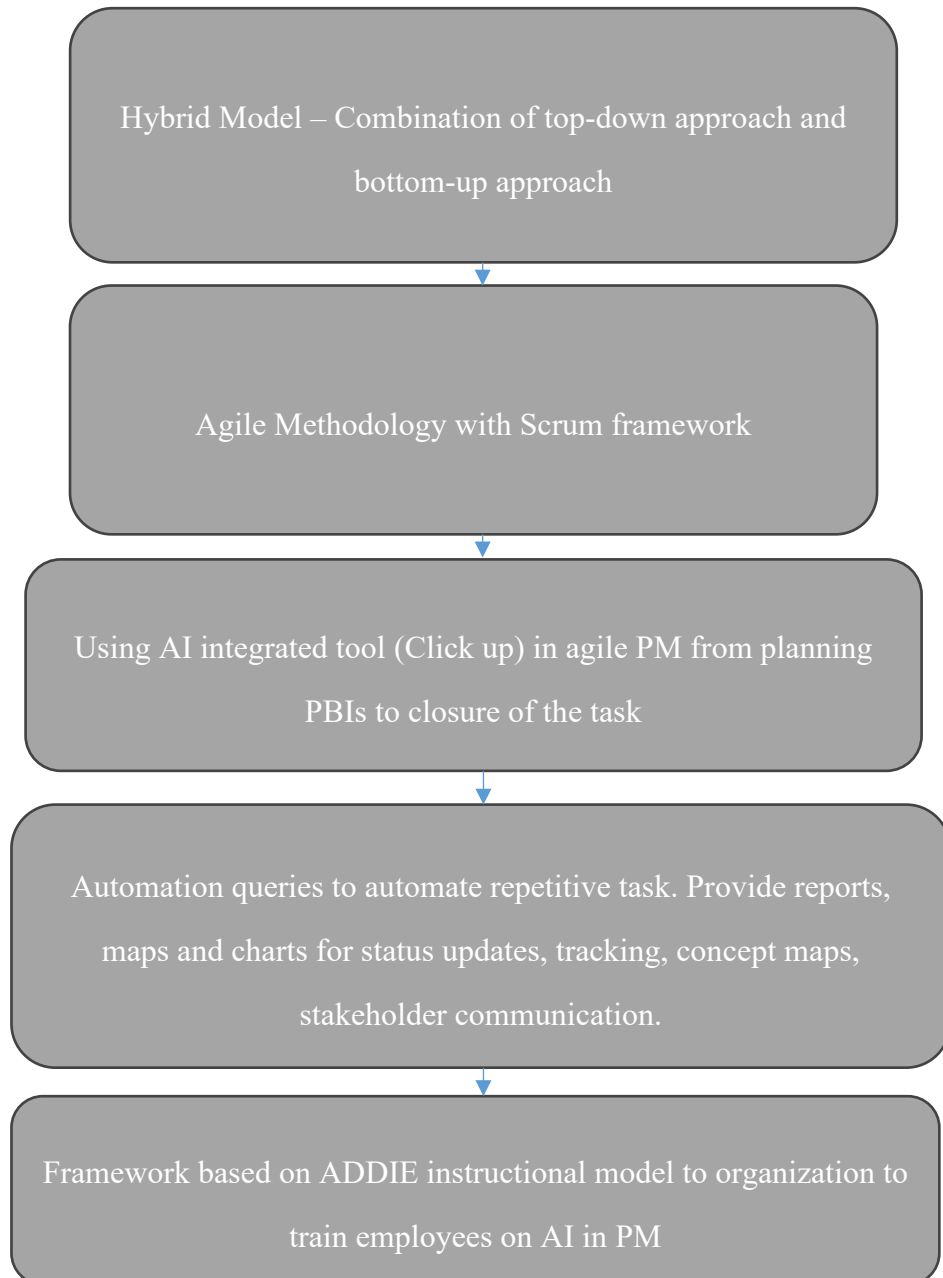


Figure- 2: Flowchart for research overview

The primary data is collected by sending a survey targeting two sets of participants, which include PM using traditional methods and AI-enabled PM. This survey is sent to groups who are either working or have worked as project managers within corporate or handled projects within corporate. The survey includes two sets of questionnaires to focus on two different items. The secondary data for this includes a systematic literature review of already existing research papers using AI in PM. All these research papers, though they use AI in project management they lag in areas from end-to-end tracking of the sprint data, lack of training for employees to handle AI, and a standard AI-enabled PM tool to be used for improvement. These areas are covered and handled in the research work. Since the project managers need to be trained in handling AI in PM and the organization lags in this part, this thesis also provides the framework to train the employees to work in AI-enabled PM to increase the growth of the organization. The AI-enabled PM tool used in the thesis is ClickUp which performs the automation queries to automate repetitive task. The mentioned flowchart in figure-2 is used as an overview of the thesis in a stepwise manner, along with the AI tool implemented. As a result, the research questions are taken care in the thesis along with the automation queries using AI in project management tool and framework to train employees/managers to handle AI in project management.

Mixed research method (qualitative and quantitative) involves the data collection as the foundation. The research outcome depends on the method of data collection used, its analysis and depth of details present in the data. Quantitative analysis provides the percentage values for the responses received. Qualitative analysis provides ways for practical and theoretical development with the understanding of the data collected. The ethical considerations are maintained with the rights of the respondents and the data that is gathered from the respondents. The main goal in using qualitative research involves the below,

- Exploration and Discovery
- Contextual Understanding
- Theory Development
- Respondent Perspective
- Adaptability and Flexibility

This methodological approach is used in a detailed investigation by capturing rich data. This data serves as a key for the analysis and integration of the research and results. This is the direct way to get the insights and quality of the study, and a quantitative research focus on numerical data.

Hybrid Model (top-down and bottom-up approach) :

The hybrid model is the combination of the top-down approach and bottom-up approach as shown in Figure 3. A top-down approach is breaking a larger problem into smaller pieces where the decision making flows from top management, and the individual decisions are not involved, whereas bottom-up approach is integrating all the smaller modules to form a bigger module and the individual along with top management are involved in decision making. In hybrid model the high level view is broken down into smaller pieces and in order follow realistic planning the top level management along with team members are involved in decision making process. The feedback and concerns from the team is also considered in the overall process. This will reduce the discrepancies and communication gap between the management's view of the product being developed and the real team member's view on the product as the team will be entirely working. Management may provide the details for cost, resources, software and team members in depth may provide details about how it could be developed and maintained along with the time required for each module on sprint basis.

Using hybrid model the project managers along with their team members are

involved in the sprint planning which takes decisions even from lower team member and further discussion is made along with higher level which adds more benefits to avoid the carry forward of items as well brings easier way to run the backlog items towards the Completion of the project without any hurdles along with stakeholder satisfaction.

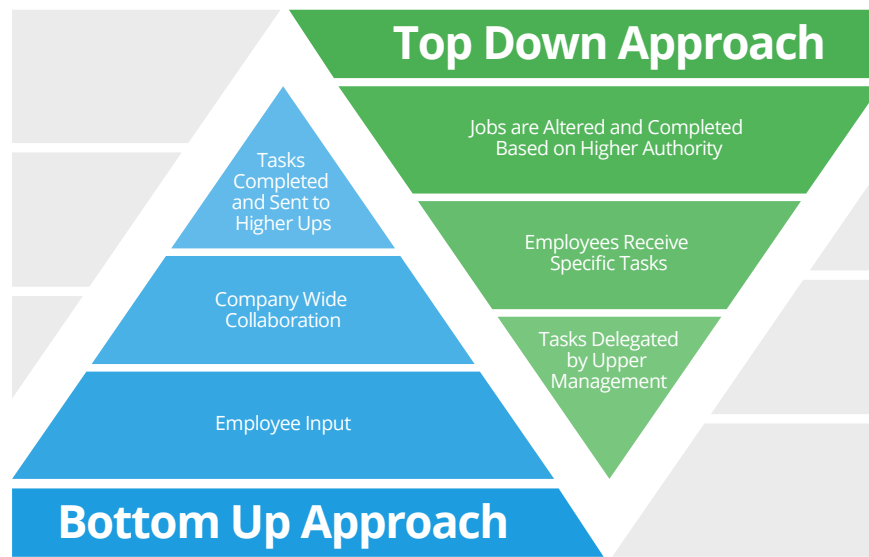


Figure- 3: Top-Down Approach and Bottom-Up Approach

The below table-2 provides the detailed view of Top-Down approach and Bottom-Up approach under different aspects which further adds on to this research work.

Table- 2: Detailed view of Top-Down and Bottom-Up Approach

Aspects	Top-Down Approach	Bottom-Up Approach
Strategy	Top management decides the goal and pre-define the budget with leadership discussion	Team members are provided with opportunity to provide feedback depending on the requirements.

Planning	Starts from the executive level, provides high level of objectives with a broader plan.	Starts with lower team members, provides ground level plan with detailed task planning.
Decision making	Centralized decision-making from top management is faster.	Decentralized decision-making and collective decision-making from team members.
Flexibility	Less flexible to change the decisions provided by the bottom level	More flexible to team-level feedback and insights, and are adaptive to changes.
Communication	One-way communication from management to the team.	Two-way communication between team members and management.
Transparency	Limited, as it involves only leadership.	High possibility due to team member involvement.
Team's Role and Motivation	Low team members' involvement and feel imposed.	High role of team members, thus, providing empowerment and opportunities.
Execution	Involves strict monitoring.	Involves sharing the responsibility.

Suitability	Best for large and sensitive projects.	Best for innovation and evolving projects.
Risk Management	Operational risks are taken care of.	Looks into practical risks and is responsive.
Feedback Loop	Status is updated to leadership.	Teams' insights and retrospective.

Agile Methodology with Scrum:

Organizations follow different methodologies in project management. Most organizations prefer Agile methodology as it follows the agile principles and agile manifesto, and the implementation of Scrum could be effective. This follows a sprint approach of 2-4 weeks. There are organizations which do not implement the agile principles on a full-scale basis and follow partly. The involvement of Scrum in agile splits the product backlog items into sprint backlog items through sprint planning, which is done by the product owner. The team members involved in this scrum are Dev, the product owner, scrum master. There will be a daily scrum conducted for 10-15 minutes to discuss the updates on daily progress, which answers the question “what is completed” and "what is the next day's goal". The impediments which are blocking the daily execution of any product backlog items or task is also discussed during scrum calls. The unresolved blockers which the team could not resolve will be redirected to the respective contact with the help of the scrum master. There will be a sprint retrospective and a sprint review, which are conducted before planning the next sprint. The sprint retrospective answers the questions “what went well”, “what did not go well” and “what needs to be improved”. Post which

the sprint review occurs, to have a demo to look at the completed items on the board, to keep everyone on the same track. This is also a forum to verify that the expectations are met as per the stakeholder needs and does not require further calibrations.

Agile methodology, along with AI in PM, is flexible, efficient and also has the capacity to automate repetitive tasks based on real-time insights. It helps team members to adapt to the changing demands. It shows that the use of AI in agile methodology increases the return and maximizes the outcome of the project. It is more suitable for complex projects to perform in real scenarios thus, tuning the organization with collaborative settings even

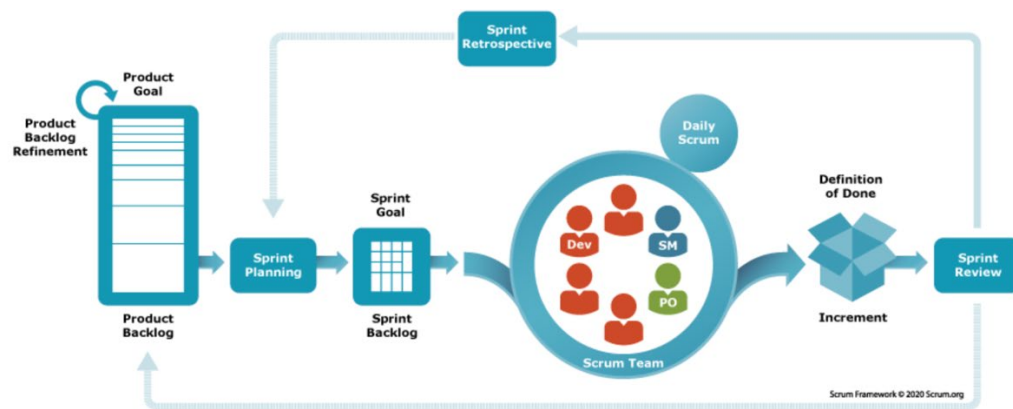


Figure- 4: Scrum Framework

in remote scenarios, with precision in decision making. Figure 4 shows an overall view of the Scrum framework, which includes the product backlog items from which the sprint backlog items are pulled over for sprint planning. It shows the team members of the scrum team include the scrum master, product owner, and developers. The scrum team is involved in daily scrum activity. Following this, the sprint review occurs along with the sprint retrospective. This cycle again continues for the next sprint, starting from pulling the sprint

backlog item for sprint planning. This framework is followed in organization which uses agile methodology along with Scrum.

Agile usually follows the SDLC and STLC lifecycle. SDLC is followed by developers and STLC is followed quality assurance team. The different phases of STLC and SDLC are mentioned below,

SDLC (Software Development Lifecycle):

1. Requirement Gathering and Analysis

- Understand what is the requirement expectation by the client.
- Define the specifications required to develop a software based on the requirements.

2. Planning

- It is to plan the timeline required and, cost.
- It also involves resource allocation.

3. Design

- This is to design the architecture of the development.
- It includes both high-level and low-level design.

4. Development

- This involves the coding for the product development.
- It also involves the unit testing performed by developers.

5. Testing

- The product is tested by quality assurance team to find the bugs.
- These bugs are fixed by developers.

7. Deployment

- This is to release the software to users for use.
- This is delivered to the user-specific portal.

8. Maintenance

- This involves fixing of defects raised by users.
- It also involves enhancements for the users.

STLC (Software Testing Lifecycle):

1. Requirement Analysis

- Analyze the requirements and understand what testing needs to be performed.
- It also involves the type of testing.
- The automation scope is analyzed.

2. Test Planning

- It is to define the scope and plan the schedule
- It also involves allocating the resources for manual and automation testing.

3. Test Case Design

- It involves preparing test cases and also preparing of required test data.
- The framework for automation is also designed.

4. Test Environment setup

- It involves setting up of environment where testing needs to be performed.
- It also includes the network setup process and hardware setup process.
- It also includes to setup the automation framework and environment.

5. Test Execution

- The test cases are run on the setup environment, and bugs are logged.
- It includes all the bugs like urgent, critical, low and high priority.
- The automation script is also run to find out regular bugs.

6. Test Closure

- The test reports are prepared with the defect details.
- The bugs are closed as soon as they are fixed.

The prepared test reports are shared with the stakeholders for review, and also help to analyze whether the defects are fixed on a code basis or design basis and provide information to make a plan about the release, whether it requires application release or database-related releases. Thus, keeping the customers updated on the feature release dates and other details, avoiding the uncertainty.

Agile Project Management integrated with AI:

As per the existing research, the use of AI in PM reduces the manual efforts for project managers. Through the survey and also from the literature review from previous research, it is concluded that the use of AI in PM increases efficiency and productivity. Around 61 previous research papers were analyzed in this thesis. From the research and comparing the survey, it shows there are drawbacks in providing training to employees, a lag in a proper framework to be followed within a project. This research work states that when PBIs are added to the board, the AI starts tracking the status based on the estimated time. Project managers use the AI Assistance to get all the details of the current PBI, including the acceptance criteria. It also shows “At risk” for PBIs which are nearing the estimated date. Through this way, the data and PBIs are maintained in an effective way using AI AI-enabled project management tool. It is not required for the manager to check with the assignee about the burndown of the task; rather, the dashboard provides all the details of the task along with the time spent by the assignee. This follows the agile scrum framework in order to be structured and formal. The process is business will pick up the task and upload the documents, further which the design team will analyze and make required template updates. As a next step, when development is completed, the quality assurance team will pick up the task, which is monitored manually. So, via AI automation, once the task is completed, a notification is triggered for the watchers and also for the

assignee, the task is marked as in progress automatically, and there is no manual effort required.

During sprint retrospective and sprint planning, it is not required to prepare documents by the project manager; rather, the scrum master can review the details by triggering an email via AI assistance or can view the dashboard for details. The dashboard even provides the timesheet details of each team member associated with the project. Organization needs to provide access to a particular group of trained employees to work on AI, and the training is explained via a framework in this thesis. Though there are various tools available for PM this thesis uses Click up due to various reasons like a single tool can handle entire project management which reduces the cost for using many tools specifically for each task with default workflows, this tool has a customizable AI to automate task through queries created on one time basis, the basic tool provides all the facilities without a paid version, customized dashboards also could be created based on project needs, AI assistance provides the meeting updates and task updates with description and acceptance criteria. Even multiple projects could be handled with this tool by creating multiple dashboards, and also folders could be created for backlogs, which other tools don't have.

3.5 Population and Sample

The thesis involves the mixed method of (qualitative and quantitative) data collection through two different surveys by framing the questionnaire with the help of Google Forms, in which the identity of the person is unrevealed. One focusing on project management without the use of AI is conducted to identify the manual efforts applied to each area, and also to predict the spill over of PBIs from one sprint to another. The survey also captures the methodology used by the participant. The survey is sent to 40 people working in the IT sector from various domains and technologies, among which 10 people responded, and it includes participants from Analyst level (freshers) to Project manager

level who are currently working on a project which involves any methodology like scrum, kanban and waterfall, and not integrated with AI. The survey is sent via online portals like LinkedIn, email. A graph is also obtained from this survey, which helps in easy understanding and estimation purposes.

Another set of surveys is collected from people working in the IT sector from various domains using AI in project management to identify the use of AI along with the challenges they faced and the impact it created within the project, which provides more knowledge for this thesis. The survey was sent to 60 participants, among whom 35 responded. From the respondents participants 5 are neglected as they do not belong to the targeted group, and the remaining 30 are taken into consideration. This survey includes only people working in project management with AI integration and belonging to higher-level categories like Assistant Manager/ Team Lead and the Manager category within the country of India. Most of the participants in this focused group had completed Agile certification, and a few had also taken PMP certification and are well-versed in project management with more than 7+ years of experience. This survey also shows the future of the organization with the use of AI in project management, as per the participants' views. The survey is shared via social media like LinkedIn, e-mail, telegram and also through peer groups, which could be more reachable. This survey also includes participants from the network groups.

3.6 Participant Selection

There are two different surveys used in the thesis, and the questionnaire set varies for each survey set. Each survey uses Google Forms to collect the data from participants, which is further analyzed to prepare a chart using the results for a pictorial representation and easy understanding. The survey on the traditional method of project management,

which uses manual efforts, involves the following categories of people working in the corporate industry, mainly focusing on project management using Agile methodology.

- Project Managers using a traditional approach.
- Devs & QAs working in traditional project management.
- Scrum Masters who take project management responsibility.
- Product Owner working on traditional project management.
- Scrum team members.

The survey for implementing AI in project management over traditional processes involves the following categories of people from the corporate industry working in different domains at the Senior Level. This also includes participants who have taken up certifications like PMP, Scrum, or any other related certification for project management becomes an add-on experience to collect data.

- Project Managers using AI from various organizations.
- Resources working on project management using AI.
- Scrum Masters who take project management responsibility with AI exposure.

The observations from these two surveys are further used to decide the use of AI in project management with an AI-enabled tool. This tool is used to automate the repetitive tasks performed in project management using Artificial Intelligence. Thus, it reduces the manual efforts and time consumed by project managers. This not only reduces the manual efforts for project managers but also helps to improve the stakeholder communication in a better way with maps, reports and graphs. Additionally, it also provides the tracking and burndown of the work by the resources allocated.

3.7 Instrumentation

A Google form survey comprised of two different sets of questionnaires, one focusing the project management through traditional methods and the other focusing on the integration of AI in project management, is distributed to the participants. The survey was requested through email, direct LinkedIn connection, peer groups and other messaging applications. Each of these surveys targets two different sets of participants. The survey keeps the identity of the participant unrevealed. The reason to select a Google Form survey over online platforms is to reach people at a faster rate and get the responses at a higher rate. When in-person interviews are performed, they need to be planned in an allocated time depending on the availability, whereas an online survey reduces the time and makes it easy to reach people through online platforms, even through 2nd and 3rd connections. The response percentage is also high. All these responses are collected together in an Excel for further data analysis. Based on the survey form, which uses a traditional method, it has been found that most people use Agile methodology with Scrum framework, and the survey form, which uses AI integration in PM, shows the impact of AI in the process of project management and the organization's reach in the next five years. There are multiple AI-integrated PM tools like Asana, Trello, Notion, Monday.com, etc., but the use of AI assistance in ClickUp is more effective when compared to other tools, and this is shown by a visual representation in the figure 5 below. The whiteboard and map feature in ClickUp helps to provide a clear vision of the sprint to team members, which in turn makes the delivery faster.

An AI-integrated project management tool named ClickUp is used to answer the questions in the thesis. The main advantage of choosing this tool is that when an automation is created for one project, it is applicable to multiple spaces within ClickUp. The answers from the survey mostly state that repetitive tasks need to be automated to reduce manual

effort. Based on this, an AI-integrated project management tool named ClickUp is used in the research work to cover the drawbacks and to show how project management is more efficient, along with automation for repetitive task with AI use when compared to traditional methods. During a planning meeting, if the steps to automate the repetitive task in an effective way with required queries and prompts are performed, then there is no requirement for manual effort until the next planning meeting happens; the only duty of project managers is to just watch the emails. The step-by-step process followed in project management using the AI-integrated tool is shown in the results section, with a live application with a sample project, along with the time spent during manual effort. Finally, a comparison is done between pre-ClickUp and post-ClickUp.

Selection of AI AI-integrated PM Tool:

The thesis uses an AI-integrated project management tool, the below figure-5 shows a comparison of different features, including Automation, usability, customizability, AI features and integration of ClickUp by comparing it with other AI-integrated PM tools. The AI assistance present in Clickup has the advantage of automating every task, and the role of the project manager is to provide a correct prompt to perform the automation and should be aware of using the tool. As per previous research and the LR project managers are lagging in using the AI-integrated tool as it is an evolving technology, and there is not much training provided in the organization as they are lagging with experts. The clickup tool has many advantages on automating repetitive task with AI. It also has the ability to track the task and timesheet of team members, which helps to take care of the workload and also with the risk status of the task, the risk could be mitigated. Depending on the due date email notification is triggered to the watchers, with which project managers can track the PBI to be delivered on time and the risk is also notified and handled before it is escalated.

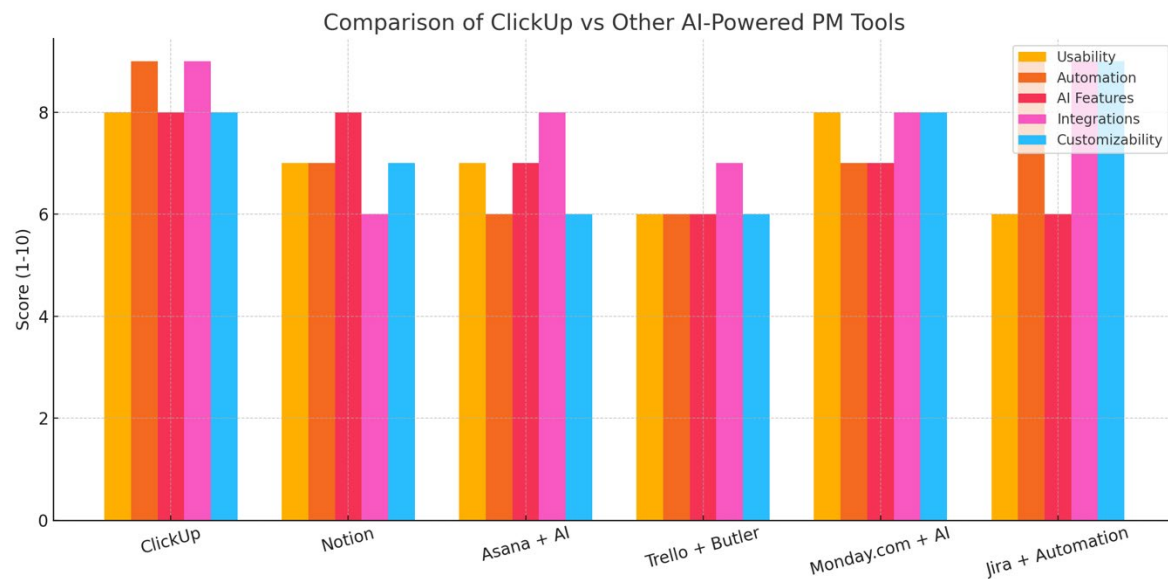


Figure- 5: Selection of Click up tool

The ClickUp tool has all the advantages with the free version of the software to be used to automate each task which is performed manually. Multiple spaces could also be created under the user, which provides easy reference in future, and also tracking could be made easy. It also has concept maps, an Eisenhower matrix to provide the road map and basic understanding of the sprint, even for the team member who joins newly after the sprint planning meeting. In the traditional method project manager needs to prepare the sprint review document at the end of each sprint to use during the sprint planning meeting by the product owner, but using Clickup, the list of tasks is available under the dashboard along with the status, which enables easy tracking and also helps to prepare the sprint review document. Usually sprint retrospective is conducted at the end of every sprint to discuss the drawbacks of the previous sprint and to correct them in the upcoming sprint. Using the clickup tool, this could be made easy and reduces the manual effort of project managers.

There are different AI tools like Asana, Monday.com, Jira, which are used to make decisions, resource allocation, automation effective and to reduce the manual effort. This

thesis suggests the organization for the use of AI tools in PM. Though it has the advantage of reducing manual efforts, it has its own limitations as follows. Asana supports only 30% automation as per the research, and the rest needs to be performed manually. JIRA states it needs more attention towards resource allocation and in prioritising the tasks due to 51% of unresolved tasks on the board. Monday.com cannot handle resources with a balanced version, and thus, it is poor in predictive analysis. This may increase the risk of approaching the project, and even the deadlines could be missed. This may reduce the satisfaction provided by the stakeholder. There is no evidence discussed regarding the feedback handled through any of the AI tools used but whereas ClickUp holds the feature to collect the feedback under a dashboard (Das et al., 2025).

Framework to train employees on AI :

As per the results from the survey and from past research papers, literature review it has been observed that organization lags with trained employees on AI to handle the PM using an AI-enabled tool. Organizations provide training to employees on the basics of AI, NLP, ML architecture, but that does not cover the application knowledge and doesn't have a framework to train the employees to adapt to the booming technology to speed up the process. Considering this as a research gap, this thesis also focused on providing a framework to organization to train their employees in a well-planned stepwise manner. When project managers are trained in using AI then it helps the team members to grasp the knowledge easily. The time spent on the delayed handling of a project using AI without proper knowledge of AI is reduced. This framework involves the following steps, which are explained in detail in the results section of this thesis. This will help organizations to train their employees on advanced AI technology for project management before handling projects, which increases the speed of usage.

- Basic Artificial Intelligence Concepts

- Technical Skill Development
- Data Literacy Training
- Practical Application use
- Integration with existing workflows
- Evaluation and Assessment
- Feedback and Support

3.8 Data Collection Procedures

The primary data for the research is collected using a mixed method (qualitative and quantitative) via an online survey through Google Forms shared across individuals working in the corporate industry under different technologies. It was conducted over a period of 60-70 days. The question in the survey form is made mandatory for the participants to answer. The only identity collected from the participant is their email ID, which is kept confidential along with their survey answers. The consent is provided by the participants, and a cover letter is attached to both the Google form, which provides the details to participants, as their participation is valued and taken into consideration for analysis. The survey includes two sets of questionnaire sections for two different sets of surveys, one which shows the traditional method over AI integrated in PM and its drawbacks, which is collected from participants belonging to Analyst up to Manager level. The second survey is shared with people started implementing AI in PM, and this includes senior-level participants like scrum masters, project managers who hold experience in PM, as well as AI-integrated PM.

The secondary data for this includes the systematic literature review of already existing research papers using AI in project management. A study of nearly 50-60 papers is performed in areas of implementing AI in project management, and a few use a hybrid

methodology. A sample of a few research papers is discussed in the next chapter, along with the drawbacks which lag in areas of end-to-end tracking of the sprint data, lack of training to employees to handle AI, and a standard AI-enabled project management tool to be used for improvement, which provides the objectives to be met in this research work.

The survey data are collected in an Excel format and compared to find out the drawbacks which are covered in this research work. Each survey has a different set of questions targeting the need to collect data on two different items for comparison. The quantitative data are analysed using descriptive statistical analysis with a column chart, which represents the percentage values of the answers gathered for the questions. The qualitative data were analysed using thematic analysis, which was manually reviewed, grouped and presented in tabular columns under each category in the next chapter. Based on this, the research is performed using AI AI-integrated PM tool in the results section of the thesis.

3.9 Data Analysis

From the two sets of survey, the first one, which collects data related to traditional PM along with its benefits and drawbacks, is sent to 40 people working in IT under different domains, among whom 10 people responded who belong to Analyst to Manager level, and they use either of scrum, waterfall and kanban methodology. The second set of surveys focusing on implementing AI in PM was sent to 60 participants working in IT under different domains, among whom 35 responded back, and only 30 responses are considered by rejecting 5 responses. The survey is sent via online platforms like LinkedIn, email, and peer groups. These responses are stored in an Excel for a detailed view from which column charts are obtained for quantitative data and qualitative data analysed using thematic analysis, which are manually reviewed, grouped and presented in tabular columns under each category.

The survey provided by the participants using the traditional method shows the challenges of the traditional method and, in turn, the reason for implementing AI in PM. The items mentioned below are analysed from the survey using traditional methods and it makes which requires integrating AI in PM for the benefit of project managers as well for the growth of the organization.

Project Management Methodology:

The survey results, which use the traditional method, show 70% of the participants use Agile methodology with the scrum framework and only 20% use the waterfall remaining 10% participants responded for the kanban methodology from figure 6. The scrum follows a 2-4 week approach with the sprint planning, sprint review and sprint retrospective in a proper manner, which helps in managing the project, and 100% participants acknowledged for sprint planning. Agile follows Scrum pattern which holds scrum master, Product Owner and developers each of them manages the team and the impediments are handled through scrum call which happens on a daily basis. Agile has its

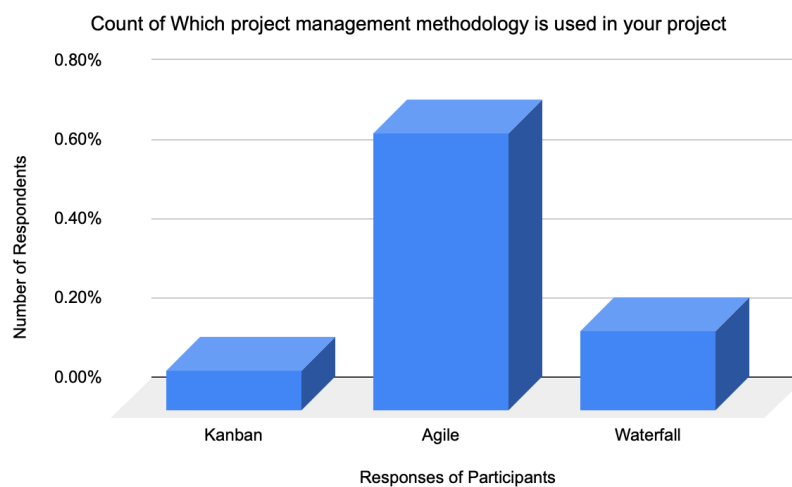


Figure- 6: Analysis of Project Management Methodology Used

appropriate way of iteration, adaptability, flexibility and an organized, structured way of maintenance.

Assigning Task to Individuals:

Though sprint planning is an advantage in agile scrum, the PBIs are assigned manually, which increases the manual effort for project managers to allocate them every time once the previous task is closed. The survey response from 70% participants shows that the task is assigned manually by project managers and 30% states that it is automatically allocated from figure-7. Sometimes this doesn't occur during planning meeting and it occurs during the course of the sprint which is an additional manual effort for project managers and also it leads to wrong estimation during planning. A few tasks are not allocated.

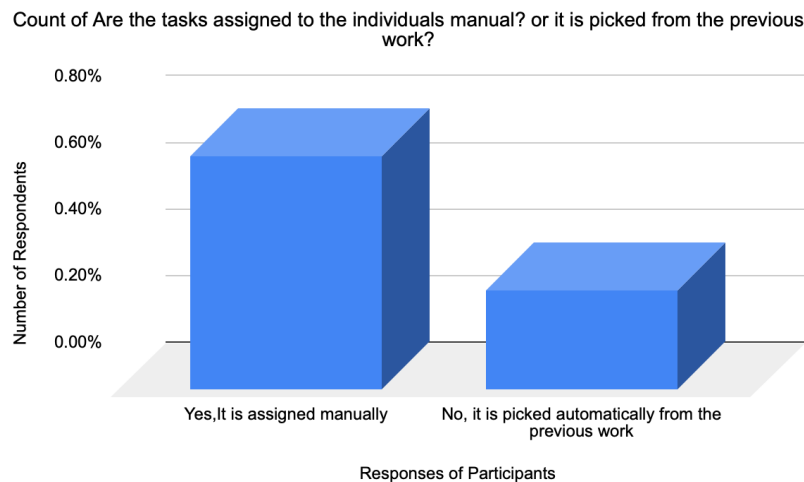


Figure- 7: Analysis of Task Assignment to Resources

to resources as it is unaware of which developer will pick the task, depending on their respective bandwidth.

Spill Over of Tasks:

The tasks assigned on the sprint board are not fully completed, and there is a spill-over to the next sprint with overdue items. This happens only with a few PBIs and not with all the PBIs. From the figure-8, 80% of the participants mentioned there is spillover, and 40% of those who answered this question stated that 2-5 tasks are carried forward to the next sprint, which shows that the planning is not done accurately. This is due to the reason that the tasks are assigned manually by project managers to the specific team member without understanding the workload of the assignee. Few resources may be overloaded which may also be the reason for the spill over of the PBI or proper details are not available to proceed further with the task.

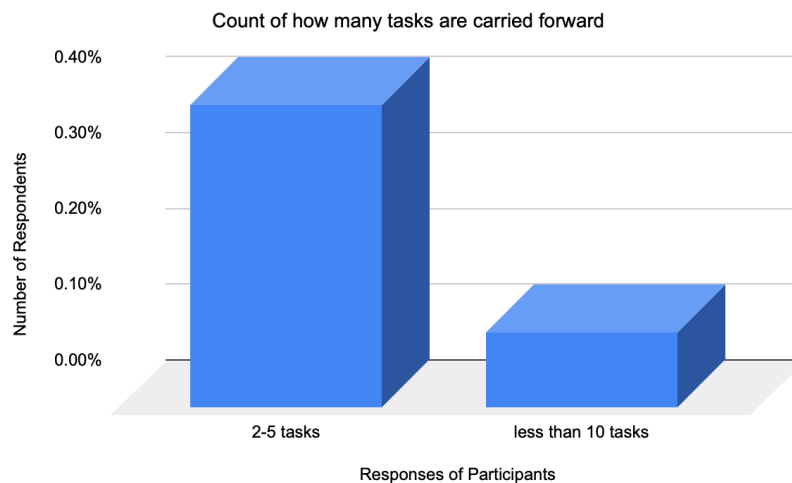


Figure- 8: Analysis of Task Spill Over

Requirement Changes:

Respondents stated that the requirements are available along with the PBI sometimes. In traditional method usually the task estimations are done manually by project managers, and it might change at a later point depending on the owner of the task. There are requirement changes as stated by 90% of the participants from Figure 9, post uploading

the documents. Since the user stories are uploaded under a particular folder, when there is a requirement changes, the possibility of not updating the user story is high, and this increases the difficulty level to search for the updated user story in future.

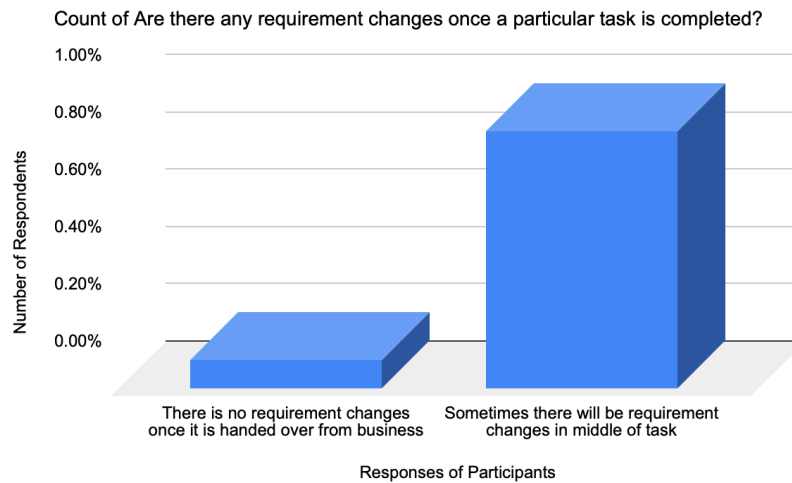


Figure- 9: Analysis of Requirement changes

Plan to Integrate AI:

The participants who have taken up the survey 100% of them stated that there is a plan to use AI in PM in the upcoming days within their organization, which is shown in Figure 10. There are various reasons to integrate AI in PM as per the survey. They include the omission of human errors in estimation, reducing manual efforts using test cases, to increase the effectiveness and productivity; tracking is difficult in manual mode. This thesis uses AI in PM using a tool which is integrated with AI in order to overcome the time-consuming tasks and also to overcome the drawbacks of the traditional method. This time is utilized effectively by project managers for product development and other critical activities which need more attention, thus increasing productivity.

The data analyzed from the survey, which uses traditional methods in PM is mentioned in detail along with the percentage in a graph and also the reasons why there is

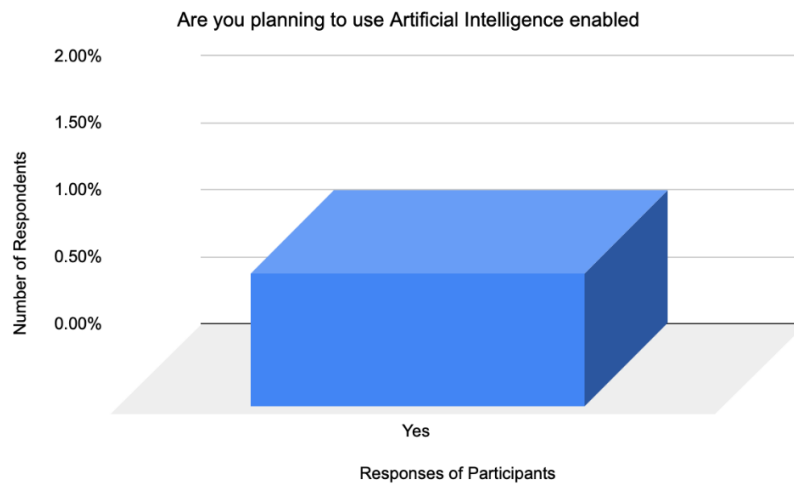


Figure- 10: Analysis of Artificial Intelligence implementation

a plan to integrate AI in PM in the future. Since AI is booming in the industry, its uses are also increasing in a timely manner. Project managers and team members need to be trained in such a way that they can handle the AI-integrated PM tool to be more effective and productive. Effectiveness also depends on the way it is being used within a specific project and the utilization of all its features to increase productivity and increase the growth of the organization.

The second survey collected was to implement AI in PM and this survey was collected from senior-level participants like managers and above, who additionally hold related certificates. In this survey, as mentioned in Figure 11, it is noted that 100% of the participants either used AI in a previous/current organization for project management. The areas where AI is most useful in project management are also analyzed, along with the project management tool integrated with AI. This also includes the areas where AI will be more efficient in reducing the manual effort for project managers, as per the participant and their implementation in the organization. Depending on this the automation is performed using the AI integrated project management tool for various process which is discussed in the upcoming section of the thesis.

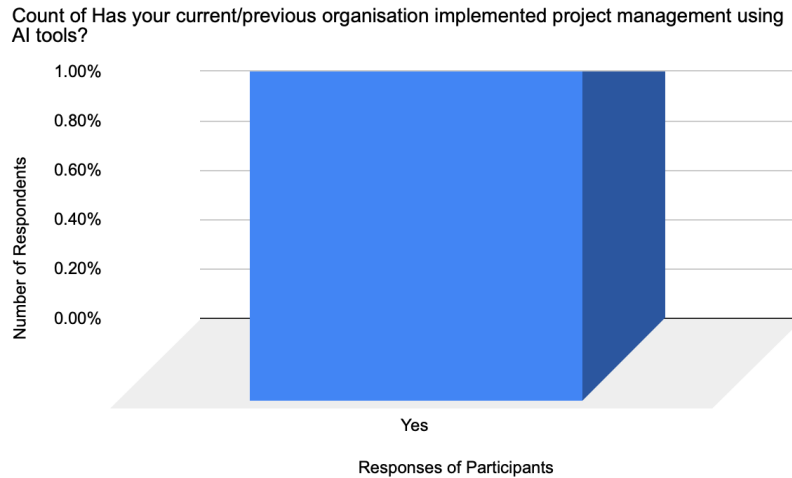


Figure- 11: Analysis of AI in PM

3.10 Research Design Limitations

The research work circulated the Google Form survey through online mode, and there is no paperwork; an in-person or interview-based survey was not conducted. This research focused on an online survey in order to reduce the in-person manual efforts and also to cover the maximum number of corporate participants under different domains, which is more possible through online mode. As this research focuses on the integration of AI in PM it collected data only from participants working in the corporate industry and eliminated the rest of the other industries. It also focuses on senior-level participants when collecting data for the integration of AI in PM survey, as those participants would have more experience and knowledge on AI with hands-on experience in project management rather than targeting analyst-level participants. A few participants who participated in the survey for integrating AI in PM have taken up PMP, Agile certification and also scrum master certifications, which further more adds a benefit to this research work as the knowledge by those participants includes both theoretical as well as practical guidance, which is still more than those other taken up the survey.

3.11 Conclusion

Through literature review and the survey from participants working in the traditional method, it is concluded that the use of the traditional method for PM involves lots of manual efforts by project managers, and also there might be chances of human errors and omission of a few tasks. Even the stakeholders need to put lot of manual efforts to get information regarding the progress of the product, which in turn involves the project manager's intervention. If those manual tasks are taken care of by AI, then the project managers could concentrate on other priority tasks.

The thesis shows the integration of AI with an AI-enabled PM tool and how repetitive tasks could be automated to reduce manual efforts and reduction in the spill over of PBIs to the next sprint. The choice of AI tool in PM is explained with a comparison analysis with other tools. Even the stakeholder communication is handled through AI assistance, which provides all the details about a PBI and the bugs logged. The bugs included both the bugs logged by the quality assurance team as well as production bugs logged by users. The drawback provided by participants in AI-integrated PM is the lack of training provided to the project managers in handling the AI-enabled PM tool. This is taken care as a research question in this thesis and a framework is provided to train the employees in a step-wise manner in AI. The tracking of PBIs for the time spent and employee effort is also explained with a prompt in the result section of this thesis, which furthermore shows the effectiveness of using AI in project management.

The thesis used a mixed research method (qualitative and quantitative) to collect primary data via a survey circulated to participants to take up the questions with consent. Qualitative data analysed using thematic analysis were manually reviewed, grouped and presented in tabular pattern. Quantitative data analysed using descriptive statistical analysis using column chart. The secondary data for this includes systematic literature review of

already existing research papers using AI in PM. All these research papers though used AI in project management they lag in few areas which are covered in the thesis. Qualitative methods provide answers to “why” and “how” from a project outcome in project management, through which analysis and comparison will be easy, along with analysis of textual data, whereas, quantitative method helps in measuring “what” and “how often”

The thesis has used the survey method in order to reach participants easily and to collect data without any time barrier, whereas other analysis, which involves interviews, takes more time and require visiting the participants in person, which is avoided using an online survey. Two different set of survey questionnaires are involved to get information regarding the traditional project management approach with its drawbacks and implementation of AI in project management to see the areas which improve efficiency.

Based on this, a project management tool is selected, which is named ClickUp, to automate the repetitive task. From various tools available in the market, this thesis has focused on this tool due to its high percentage of integration, automation and usability when compared with other AI tools. Moreover the automation is reused for other project spaces within the tool. The integration of AI also helps the quality assurance team to write test cases so that the team can concentrate more towards the quality of the project. These implementations should be followed by the organization as per their policies and guidelines. The automation performed with this tool is open source and could be shared across other team members as well. This tool holds accountability for handling the product backlog items during the sprint. During every sprint, this reduces the planning meeting timing, which occurs for an approximate time of 2-3 hrs or some days planning would be post-poned for discussing the spill over of tasks, which could be avoided, and even if the spill over is reduced. Manual efforts are reduced for project managers along with quality assurance team.

CHAPTER IV:

RESULTS

The results obtained through the research and the analysis of the data collected via two different Google Form surveys from various participants working in different domains in the corporate environment under different levels, and also a comparative analysis from previous research papers, are discussed below, which answers the objectives of the research work and further discussion is provided in the next chapter. One Google Form survey is collected from Analyst level to manager level related to traditional project management method, whereas another Google Form survey is collected from higher level of participants who belong to project managers, scrum master level related to using AI in project management.

4.1 Research Question One - To provide an analysis of PBIs on the board to improve the overall performance of the project by automating repetitive tasks

A survey consisting of multiple questions related to the AI in PM and PM using a traditional approach was sent via Google Form to various participants working in different domains in the corporate who are currently/previously worked on AI in PM. The following sections are the results obtained from the survey for different questions from different participants on the effect of using AI in PM.

Discussion Of Traditional Project Management Survey Results on Project Management Methodology Used:

The graph in Figure 12 below shows that 70% of the participants worked on an agile framework due to the sprint approach, which is followed in agile. This provides multiple sprints within a month where the PBIs are broken down accordingly within the sprints, and it is easy to track. But few of the participants from the survey mentioned that there is a carry-forward of tasks from one sprint to another. The carry forward of tasks to

the next sprint increases the burden for the next sprint, as well as when successors are created, which creates an impact on stakeholders that there is a deviation in the product delivery on time. There may be a carry forward of tasks from sprint to sprint when the PBI is decided to be released later, but not at all times. Using AI, the spill over of PBIs could be reduced, and it avoids the need to create different parts for the same PBI, which removes the stakeholder's bad impression and increases trust, along with the timely delivery.

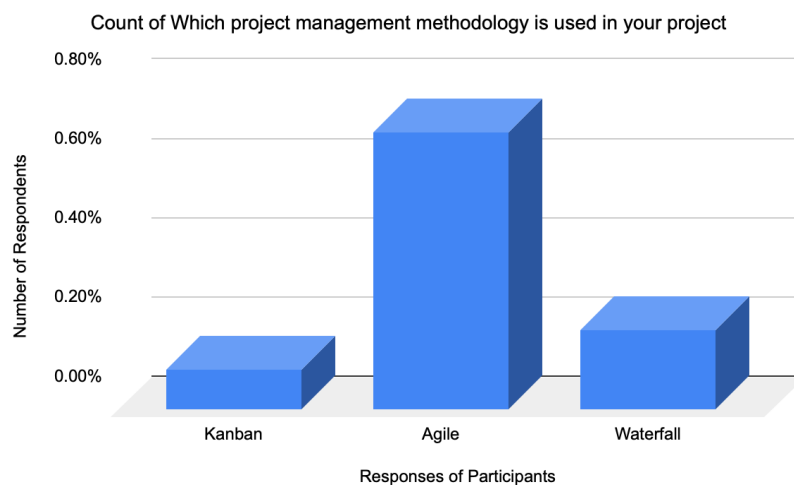


Figure- 12: Results for Project Management Methods

Results For Carry Forward of Tasks/PBIs:

The chart in Figure 13 below shows the response stating the count of tasks that are split over to the next sprint from the current sprint. From the survey 80% of the participants stated that 2-5 tasks are carried forward to the next sprint. The use of AI will reduce the spill over of tasks, thus resulting in increased productivity. There may be multiple reasons for the carry forward of task it could be DEV task, testing task or design task to next sprint which includes limited availability of bandwidth to perform the task, limited details available under acceptance criteria, impediments by having dependency with some other cross-team, issue fixes or inputs pending from external vendors when using external

software in case of importing/exporting feature. This could be solved when a proper agile methodology is followed within the project, along with AI implementation to reduce these impediments.

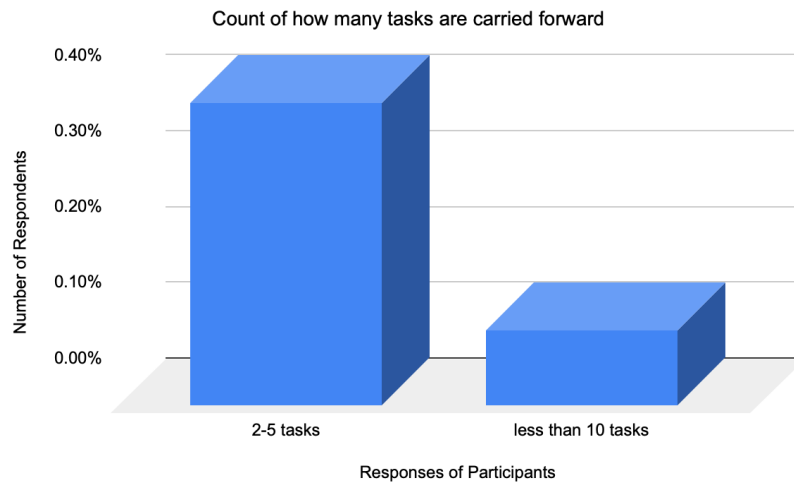


Figure- 13: Results for Carry Forward of PBIs

Results On Task Estimation:

Traditional project management involves manual efforts, so the survey results from Figure 14 shows 80% of respondents reported that the PBI/task estimations are done

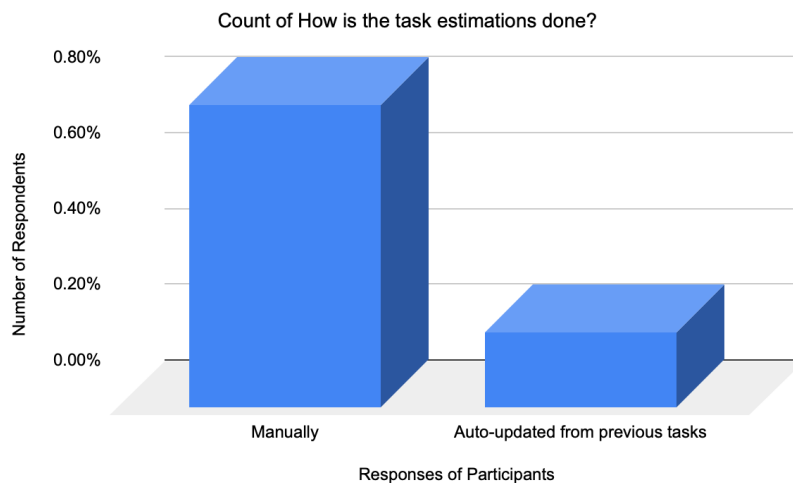


Figure- 14: Results for Task Estimation

manually by project managers, and only 20% participants mentioned that it is updated based on the previous task. This may be altered when the development task requires more time than the estimated period. This may lead to extended delivery of that particular sprint, or in the case of release, it might require additional days to push to production. This human error could be handled by AI AI-integrated PM tool, or it would provide an early warning in such cases if extension is required, depending on the risk.

Results On Availability of Task Details:

As per the google form survey results collected from the respondents, figure-15 states that 70% of respondents mentioned that the details to start a PBI or a task is available in prior on the board and 20% mentioned that only few details are available and the remaining respondents mentioned that requirements need to be collected as and when the resource starts working on the PBI/task. Even though 70% mentioned the details are available in prior, there will be a requirement change from the business, which needs to be handled by project managers manually and updated to the description. There might be a chance for omission of any details or human errors to occur. AI-integrated PM tool handles

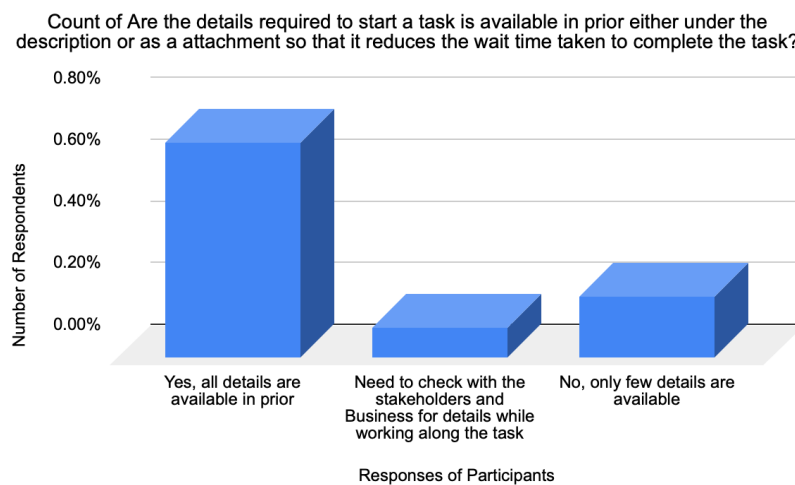


Figure- 15: Results for Requirements availability for a PBI

this with the AI assistance to make it feasible for the resource working on that PBI. Every time the requirements are updated by BA, the AI assistance will provide those updates when searched with appropriate prompts.

Results On Requirement Changes:

The graph in Figure 16 shows that 90% of the participants stated there are requirement changes once the planning is completed. In agile methodology, there might be a few requirement changes, but this should not affect the PBIs which need to be delivered within the current sprint. AI chatbots will track the change in PBI description/acceptance criteria once they are updated by the business. This will help project managers to reconsider the changes and track them using AI.

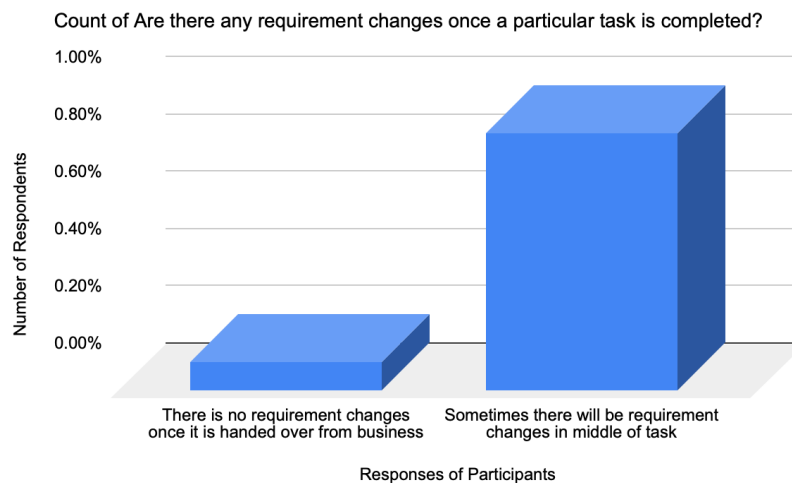


Figure- 16: Results for Requirement changes for a task

Reasons to adopt AI in PM over traditional methods to analyse PBIs:

As per the survey results taken by participants, below are a few reasons why traditional PM need to be replaced by AI-enabled PM. Based on which, there is another set of surveys taken which includes AI in PM.

- Manual PM is not system-driven driven so there might be omissions, human errors which require constant monitoring through manual effort before implementing.
- Based on the number of test cases, test estimation is done manually.
- AI can automate repetitive tasks, optimize resource allocation, to identify risk and mitigate them, which increases efficiency.
- When manual efforts are handled through AI, it reduces the manual effort, which in turn reduces the time taken.
- Tracking of bugs/tickets manually is difficult.
- The PBI maintenance requires efforts till the close of the PBI daily which consumes more of project managers' time and effort. When PBIs are not closed when they is done leads to wrong sprint review document preparation by the team.
- Stakeholders need to be communicated with via email or manually.

Organization's idea and motivation to implement AI in PM:

As per the results collected from the experts at different levels within the organization, it shows that the below are of reasons primarily employed to integrate AI in PM within the organization so that it could increase the efficiency and increase the growth of the organization when compared to traditional methods. The following data from Table 3 are the combination of motivational ideas to implement AI in PM.

Table- 3: Organization's Idea to implement AI in PM from the survey

S.No	Idea and motivation to implement AI
1	A combination of strategic vision, operational need and technological opportunity.
2	Market trend and reduce redundant manual tasks

3	Recurring issues like missed deadlines and communication gaps highlighted inefficiencies in the manual process.
4	Reduce the manual time taken for management so that the time is utilized for product development.
5	Reported delays often highlights the inefficiency in PM using traditional methods.
6	To speed up the process and to reach goals efficiently.
7	Error-prone manual testing by writing test cases manually using the user story documents
8	Evolving technology
9	To reduce human errors and maintain the standard of testing and coding
10	To ease the manual effort
11	To satisfy client and stakeholder expectations

Areas to be covered under PM using AI:

The survey states that there are also a few areas which need to be covered primarily in PM so that the PBIs in every sprint are covered within the allocated time without spill over, and the sprint is delivered without any delay, thus in turn the project delivery occurs on time, satisfying the stakeholders and the product quality, which is shown in Table 4. This helps clients receive the features on time.

Table- 4: Areas to be covered in PM using AI from the survey

S.No	Areas to be covered using AI in PM
1	Optimize a wide range of tasks to reduce the manual effort.
2	Automating the reports
3	To handle support tickets/bugs
4	To get details regarding a bug or a ticket raised without missing the information and to make tracking facile.
5	Automation of repetitive tasks
6	Documentation and tracking
7	Prioritise tests to find defects to increase the quality of the project.
8	Handling client requirements
9	Coding assistance, timesheet automation, reports automation and automated email triggering.
10	User acceptance criteria creation, request for details using AI from the PBI
11	Tracking the PBIs to get more information via AI assistance

Impact on efficiency and delivery time using AI in PM:

When AI is implemented in PM, the survey from the participants states that it increases efficiency when compared to the traditional PM approach, which results in

improved delivery of the project and satisfaction to the stakeholders when the product is delivered on time. The below mentioned table-5 are the result collected from the survey, depending on participants with various experience levels using AI in PM.

Table- 5: Delivery time and Efficiency impact in using AI from the survey

S.No	Efficiency and Delivery Time
1	Saves 30-40% time of daily PM tasks and increases speed by 10-25%
2	Automating manual tasks improves the delivery.
3	Helps in understanding the requirements and reduces the gaps, thus focusing on timely completion
4	Improves the monitoring
5	Manages nearly 30% of management time
6	NLP tools streamline team collaboration
7	Real-time monitoring and adjustments which increase the efficiency

Quality and Stakeholder satisfaction using AI in PM:

When the manual efforts are reduced, the time is utilized by the project managers for other product development activities, thus the stakeholder satisfaction is increased. The use of AI in PM improves the quality of the product when repetitive tasks are automated.

The data from Table 6 are the results collected from the survey from different participants using AI in PM to improve the quality and stakeholder satisfaction.

Table- 6: Stakeholder Satisfaction in using AI in PM from the survey

S.No	Quality and Stakeholder satisfaction
1	Improves the quality of the project, thus resulting in high-quality delivery and confidence in project execution
2	Improved timeline
3	Stakeholder tracking for the feature development
4	Increases the accuracy and improves the product
5	Increases customer satisfaction
6	Reduced workload and saves time.
7	It increases the transparency through dashboards and improves the satisfaction.
8	Automate testing feature, identify anomalies.

Generally, PM in an agile environment involving scrum approach using AI improves the manual effort in many ways reducing the time taken by project managers. Depending on the results obtained from the survey, the use of AI in various areas increases the efficiency and delivery of the product is made faster, thus increasing the growth of the organisation. This helps to use an AI-enabled tool for PM, and a stepwise process in

automating the repetitive task is discussed in the next chapter, along with the implementation using the AI tool. The time is used by the project managers for other product development activities. To reduce the time taken by stakeholders for communication purposes and to collect other details regarding a PBI can also be achieved using AI tools. The different dashboard tracking is also explained, along with timesheet management and maps for better understanding. The quality assurance team also mentioned that the use of AI will reduce manual efforts in writing test cases, identifying anomalies and automating features like bug logging, steps to reproduce, etc. When products are delivered on time, the clients are handed over with the expected feature on time, mainly useful in auditing organisations where filing of taxes are to be performed on a specific time. Results of research papers on analysis for data collection:

A study of nearly 50-60 papers is performed in areas of implementing AI in PM, and few use hybrid methodology. A sample of few systematic literature reviews of already existing research papers is discussed below, along with the drawbacks of the previous research, which provides the objectives to be met in this research work.

AI-driven scheduling techniques for Agile project management state that collaboration, flexibility seem to be more prevalent in agile framework, whereas scheduling and accuracy seem to be challenging in traditional methods. To overcome this, the author performed research in PM using AI, which also helped in decision-making. The machine learning algorithm and NLP involved in AI are useful for team capacity analysis, scheduling, sprint planning with the historic data and are also used to prioritise the backlog items and easy communication with stakeholders. AN enabled PM tool also has a dashboard for visual purposes, which is helpful in stakeholder communication and in making decisions. It also highlights the fact that AI will not replace humans but is used to boost them by helping team members internally. The research lags in areas, like there is no

practical tool used, and no explanation of real-time scenarios to perform PM using AI AI-enabled tool and also the bug logging is not handled in this research (Willie, 2025).

Automated PM in the digital era – a survey of AI approaches that AI has a huge growth with AI assistance like Siri by Apple, Google Duplex. AI algorithms are widely used to automate a few processes and workflows in business, policies, society. This thesis uses a LR and previous research papers to automate tasks in PM. It states the different AIs and algorithms used for different areas like decision making, problem solving, communication and robotics. This paper aims to provide real-time scenarios of implementation of the AI-integrated PM tool to automate repetitive tasks and also a framework to train employees and project managers to handle the AI-enabled PM tool (Auth, Jokisch and Dürk, 2019).

Assessing the impact of AI on project efficiency enhancement surveyed 159 project supervisors and also a survey from project managers implemented in 7 different industries like green energy, software, engineering, civil, tourism, transport, and science in Kazakhstan. It used the linear regression method with a scaling of 1 to 5 and identified that AI is useful across all domains in automation, but it is used in a different way. The scaling shows the adoption rate and efficiency rate across each domain. Tourism, being the lowest usage of AI, has an adoption rate of 1.9 and efficiency rate of 2.2 and software being the highest with an adoption rate of 3.2 and efficiency rate of 3.3. It concludes that the three important areas in software include automation, decision making and voice technology. This paper aims to show the bug logging system and the real-time implementation of an AI tool in PM (Kozhakhmetova et al., 2024). Key challenges of adopting AI tools in PM in Ghana state that the impact of AI in PM has increased and had the most effect over the past decades. The use of AI in PM increases performance, and it is also stated that this shift has a few obstacles. This research provides a list of obstacles in using AI in PM, though it

has its own benefits. These obstacles include infrastructure, poor understanding of AI, a shortage of AI management skills, a poor attitude to using AI, internet connectivity and its high adaptation cost, and a lack of strategic planning on using AI. A part of these challenges is covered in the current research using a specified AI-enabled PM tool to automate repetitive tasks, and also provides a framework to trainee employees and project managers to handle and work on AI AI-enabled PM tool to increase the efficiency and productivity (Akomea-Frimpong et al., 2024).

Co-pilot for project managers: Developing a PDF-driven AI chatbot for facilitating PM research uses an AI PDF chatbot for PM. Using Open-Assistant SFT-1 12B interpretation of PDF data is performed. It used the results gained from 15 project managers who have knowledge on chatbots and it also provides more information to stakeholders. It is more useful for e-commerce field for processing the data and managing the risk. It includes pre-processing of data, numerical normalisation, tokenization, and identifying extra spaces and punctuations. It optimises project management methods by aligning PDF contents with a cosine of 80.8% and semantic score of 85.21%. The author states that there are a lot of chatbots like ChatGPT, sci-summary. This PDF chatbot focuses mainly on e-commerce for project management activities like decision making, automation. There can be an enhancement in the future with future research opportunities. This paper aims to show steps to improve the quality assurance team effort (Alam et al., 2025). Building hybrid PM by combining agile and traditional methods with AI for optimal (Mia, 2025) states that traditional project management is a structured approach with clear requirements, and Agile methodology is iterative and flexible. But when it comes to the complexity of the project to decide with one method is difficult when considering the limitations, so, hybrid methodology is used to handle those projects. It shows how hybrid PM helps and the role of AI in transforming project management. The author used a case study and,

literature review to collect data regarding stakeholder satisfaction, resource allocation, risk management to get the exact optimal results. It shows that by implementing hybrid methodology with AI helps organization in real time decision making and automation capability. There is future research required on how to train employees to handle the AI enabled tool.

Evaluating Agile impact on IT financial planning and project management efficiency by (Ajiga et al., 2024) states that Agile methodology is being followed in software industry from a long time which helps to handle the changing requirements and flexibility whereas, traditional project management methodology follows a linear pattern in PM and is not adapted to changing requirements. In agile the sprint last for 2-4 weeks by end of the sprint there will be an idea for stakeholders on the increment of the product. Customer satisfaction/collaboration, responding quickly to the changes, sprint review, sprint planning, software development, scrum calls, transparency, communication are all the key factors in agile methodology. Due to these reasons and also adapting to the changing situation in complex projects helps more in IT projects to handle the situations in a smooth manner. It is useful more in financial sectors and IT sectors due to a greater number of complex projects. When project scope is defined and there is no room for changes then the fixed budget with little adjustments works well as it also projects a clear framework and is more useful in manufacturing, construction projects. These fixed budgets are problematic in complex IT projects where there will be requirement changes during a period of time.

4.2 Research Question Two - To detect the bugs and other loopholes in the project management to operationalization of theoretical constructs to improve the quality of the project

The survey results from the Google form which uses traditional approach of PM

is collected from participants are combined and discussed below This shows how the bugs are logged and tracked using traditional method. The survey results collected showed that most of the participants mentioned “software testing” as the major area to implement using AI. Based on this survey AI integrated PM tool is used in this thesis to reduce the manual effort in PM and also to avoid the missing or duplicate entry of bugs. This improves the quality of the project to be delivered and also increases the satisfaction of stakeholder. The traditional method includes writing test cases manually and making them either pass/fail depending on the testing results. AI integrated PM tool reduces this manual effort for quality assurance team.

Logging of Bugs and Tagging to The Respective PBIs:

Quality assurance team plays a major role in product development within a project. Initial step regarding quality assurance team when testing a feature or a PBI is the logging of bugs and in traditional methodology of project management bugs is logged manually in the PM board. All the bugs raised either by quality assurance team or bugs reported in production environment is logged. These includes the tickets as well as few organizations name the production bugs with the term “ticket”. The below graph from figure-17 shows

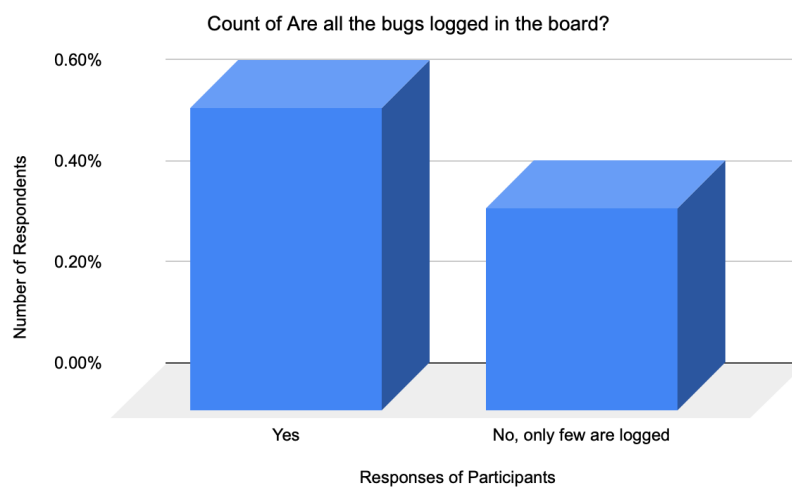


Figure- 17: Results of Logging bugs on board

that 60% of the participants stated that all the bugs are logged on the board and 40% stated that only few bugs are logged on the PM board. The use of bug logging helps to reduce the bugs in the product and also to reduce the production defects. This improves the quality of the product not to full extent but major blockage and issues are resolved before the product is handed over to the client.

There will be PBIs/task associated and when testing them leads to identify a bug by quality assurance team. When these bugs are logged a bug Id is generated which needs to be tagged to that specific PBI/task which is done by project managers. As per the survey results from figure-18, 80% of the participants mentioned that the bugs are tagged to the board and remaining 20% mentioned that the bugs are not tagged to the PBI/task. This will

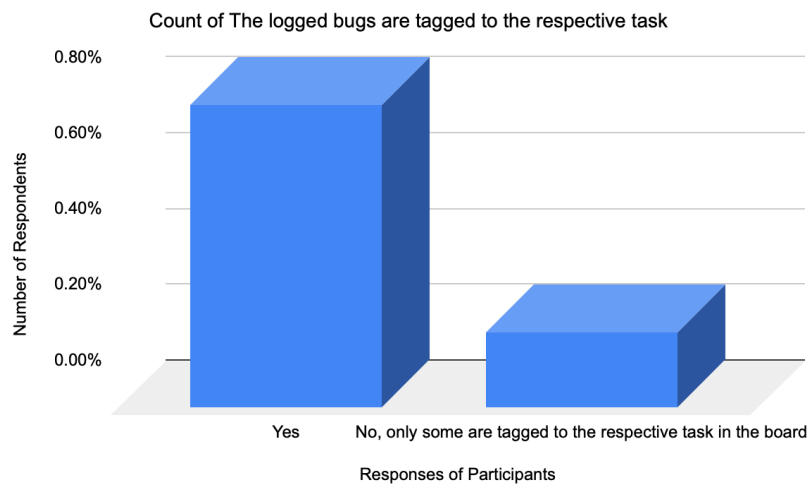


Figure- 18: Results for tagging Bugs to Tasks

not provide a proper tracking of the bugs and there might be few bugs missed out and in future it might affect the quality of the product and there is a chance for the bugs to reappear in the future. An AI integrated PM tool will track these bugs along with their status which will also reduce the manual efforts and the chance to miss a bug is reduced. The AI integrated PM tool will identify the duplicate bug created which is missed through manual.

Tracking of bugs:

In traditional PM the bugs are tracked using manual effort by project managers during every sprint planning and during metrics log. From the survey results from figure-19 shows exact half of the participants stated that there is manual effort required to track a bug and remaining half mentioned there is no manual efforts required. Project managers spend time to track these bugs everytime. An AI integrated PM tool with the AI assistance provides all the details of a particular bug when a prompt is provided. This even makes stakeholders also feasible to track all the production bugs in order to decide the quality of the product. When this manual effort is reduced project managers utilize this effort for other priority tasks for product development.

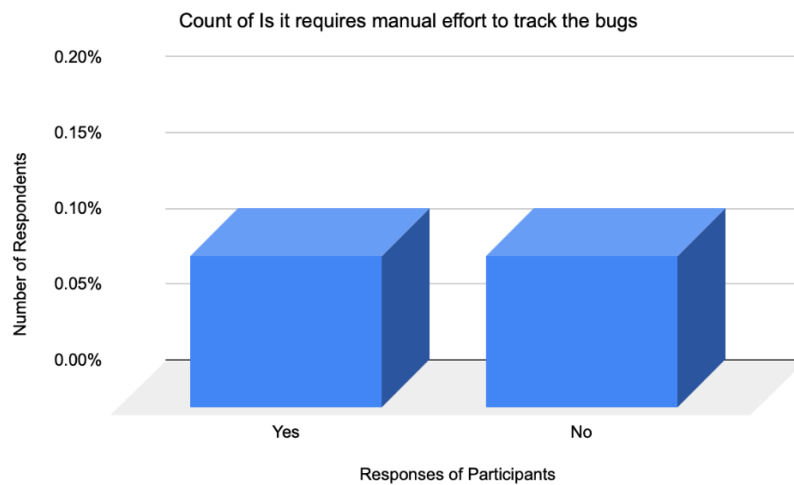


Figure- 19: Results for Manual efforts to track the bugs

Reason to integrate AI in PM tool to improve the quality of the product:

As per the survey results gathered from participants there were lots of reasons to move to AI enabled PM and software testing is the majority among those reasons listed. Combination of those reasons are mentioned below which paves the way on why to adapt AI in PM and its benefits.

- There is no omission of bugs to log on the PM board.
- Manual tagging of bugs to respective PBIs might be missed out.
- There is duplicate creation of bugs on the board through manual effort which leads to increase the bug count and chance to reduce the satisfaction of stakeholders on the product quality.
- Tracking of bugs takes more time by project managers everytime during planning meeting and a paper work needs to be done to maintain the tracker which leads to either mis-match in count or missed details of a particular bug.
- Testers write test case manually either through excel or directly into the PM tool used.

4.3 Research Question Three - To provide step by step process to the organization to train their employees in Artificial Intelligence skilled techniques

From the survey results obtained from the participants it states that there is no proper training provided to the employees on the AI tool to be used in the current project. The below mentioned question was asked in the survey.

What are the trainings that was provided to team members in AI tools?

The results obtained from the survey regarding the training provided to employees are listed below

- Gen AI, ChatGPT, Copilot for brainstorming.
- Compliance regulatory and basics of AI.
- Training on prompt engineering for product development.
- AI fundamentals, ML and NLP basic applications with AI ethics and bias.
- Introduction to AI in testing and visual testing with AI.
- Self-learning to implement AI in application.

- Role specific AI training as for developers it is architecture and development, Analyst it is predictive analysis and dashboards, Managers it is ROI and risk management.
- Session was provided with click up, Asana, Monday.com for its overall usage and its application into the project.
- AI and its data management policies.
- Upskilling employees to make use of AI into quality assurance.

These survey results collected from the questionnaires states that employees have been exposed to available AI tools in the market and its usage for all roles like development, testing, analyst and managers. But there is no specific framework provided to train employees to maintain the standard of the training. Organizations have kept the doors open for employees to groom themselves in AI. The stepwise training on how to adapt employees to handle AI needs to be provided to utilize AI in PM in effective manner.

4.4 Summary of Findings

The thesis used a mixed research (qualitative and quantitative) method through a

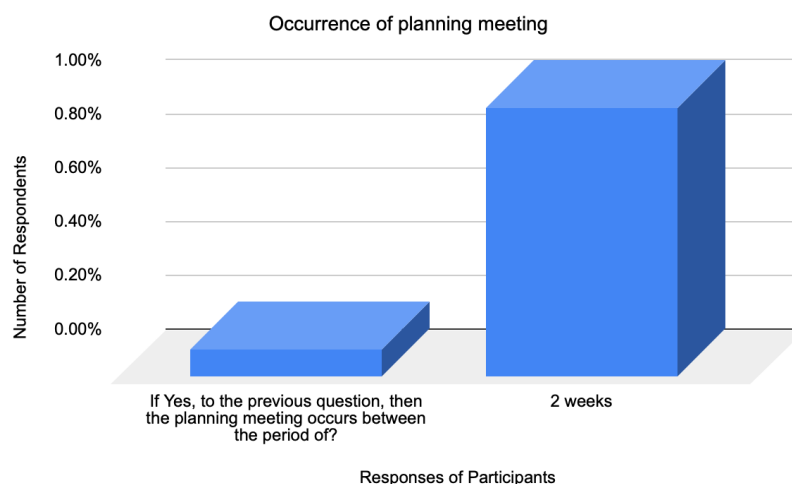


Figure- 20: Results for Planning Meeting Occurrence

google form survey and study to gather information of traditional PM method and reasons to integrate AI in PM. The analysis of two different survey with two sets of questionnaire was performed above with the findings. The survey which was collected with reference to the traditional method of project management states that currently the majority of organization follow Agile methodology with scrum, which includes sprint planning, sprint retrospective and sprint review. From the survey, as per the figure-20 it shows that 100% of the participants stated that the planning occurs within a period of 2weeks. The survey also states that within the span of 2weeks, all the planned PBIs may not be completed in a few organization due to which there is an average spill over of 2-5 PBIs to the next sprint and it adds burden to the next sprint. In traditional PM the task are estimated and assigned in manual way and everytime the details of the task needs to be collected manually from the PBI which may lead to human error. Additionally during meetings if project managers require any further details about a specific PBI the process involves to search with that task id or description and then dig in to fetch the details to present it to the committee members. From quality assurance point of view as per the survey results it is found that the test cases are written manually with the available requirements document and the bugs are also logged manually to the test management tool. This may lead to missing test cases and duplicate entry of bugs either it is internal or prod bug. There might also be no proper tracking in case project managers miss to monitor the bugs continuously. Due to all these consolidated reasons the participants responded to use AI in PM in the upcoming days. AI is also boosting the corporate industry with its automation feature and in built assistance available within the PM tool. The use of AI will reduce the manual efforts for resources and also increase stakeholder satisfaction and increases growth of the organization.

The second set of survey which was collected with reference to implementing AI in PM involves particular participants from senior level and above and a few have

additional benefits of completing CSM, PMP certifications which shows that they have both theoretical and practical knowledge on AI and more eligible to take up the survey. The survey results shows the primary areas in PM where AI is more feasible and useful. It has stated that apart from PM, AI is useful mainly for quality assurance team to reduce the manual efforts in all ways like test case generation, bug logging, tagging to respective PBIs and tracking of bugs until closure of the bug. With the use of AI respondents stated that automation of repetitive task is made feasible. But, the case study results and survey results has not mentioned any particular PM tool to be used and there is no live application mentioned from the analyzed 50-60 research papers. There are few challenges noted from the survey which states lack of knowledge and training in AI, resistance to change, skill gaps and also the cost for using the AI tools by organization. But as per figure-21 it shows

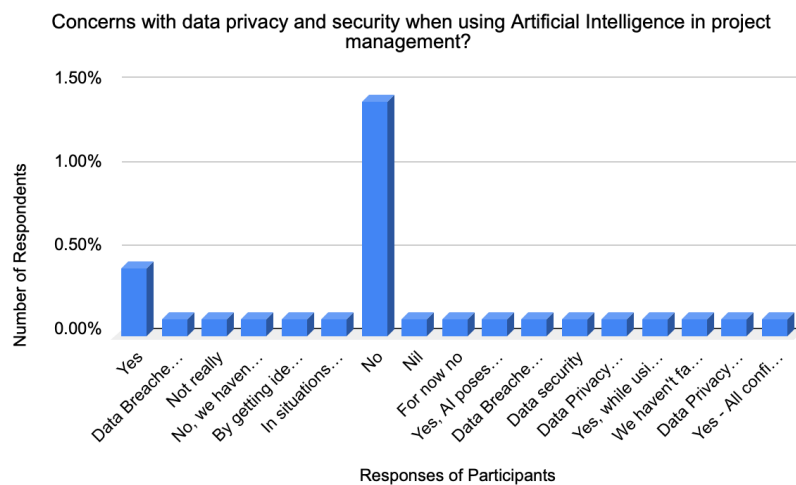


Figure- 21: Results for Data Privacy and Security concerns

that majority of them responded stating there is no concern for data privacy and security. Overall the survey shows automating repetitive task reduces both time and effort. Each of them is discussed in detail with their results above.

Organization's plan to increase the use of Artificial Intelligence in the next five years:

Few organizations started using AI in their project and not to full extent due to lack of training and skills needed to handle them. Organizations have a plan to slowly start using AI in their projects. As per the survey the below mentioned are few plans mentioned regarding the view in the next five years.

- Implementation of Gen AI.
- Plan to have inhouse AI tool to train and model according to the organization needs.
- To have complete enhanced QA environment for better quality of the product.
- To utilise the maximum benefits from the tool in the area of PM.
- To increase the use of AI in PM from 20% to 80%.
- To make understanding of AI and to utilize them when new features are added and to simulate the tickets to plan the sprint accordingly.
- Better stakeholder communication, customer feedback, and maintain a healthy team member collaboration.

Factors Between Traditional and AI enabled PM:

The below table-7 shows few factors which holds the comparison between traditional project management and AI enabled project management which was gathered through the research survey and suggest agile is better with scrum. These factors are generally involved in most of the project management across corporate organization.

Table- 7: Factors of Traditional and AI enabled Project Management

Factors	Traditional PM	AI enabled PM
PBI Creation	Both task and sub-task are created manually during planning	The task pulled from backlog and sub-task is automated

Resource Allocation	Assignee for task are manually done	Resource allocation is handled through AI
Risk Management	Tasks are monitored to identify the risk	AI notifies when a task is at risk
Decision Making	Manual decisions are made	AI assistance help is taken when required
Team Collaboration	Collaborates through daily scrum to discuss impediments	Collaboration happens via maps and other dashboards
Quality assurance	Manual methods of writing test case and tracking bugs	AI generated test cases and helps in tracking of bugs along with the default template available to log bugs
Estimation	Manual estimation is performed	AI performs estimations for sub-task
Code Review for Dev	It is manually performed	SonarQube with AI integration is used
Tracking	Manually prepare sprint planning documents	AI customized dashboards are used for tracking PBIs as well as timesheet tracking for resources

4.5 Conclusion

The analysis of the results obtained from the survey of traditional method shows the manual efforts performed by project managers and the survey results related to using AI in PM concludes the use of AI to automate repetitive tasks. The traditional method survey states that the task estimation, assignee are performed manually by project managers

and also bugs are logged, tracked manually by project managers. This research uses an AI integrated PM tool to automate the repetitive task in PM from creating a sub-task till tracking of bugs on the board. The tool selected in this research work is click up an AI integrated tool to handle the PM activities. It is not only used for PM activities but is also used by quality assurance team to convert few testing activities which is performed manually to an automated one. The PM activities which are automated are sub-task creation, resource allocation, risk management, bug tracking, email trigerring, dahsboard maintenance, sprint document creation, stakeholder communication to fetch details of a task, closure of task, conceptual map for internal team discussion, timsheet tracking etc. Additionally this thesis also explains the training framework provided to organization to train employees to be well-versed in the usage of AI in PM. The AI enabled PM could be used in domains like healthcare, auditing, sales, insurance etc as per the case study results.

Various research papers suggested the use of AI in PM is more efficient but the tool to be used for PM along with automations prompts are not clearly covered. The framework to train employees to handle these tools are also not mentioned which is discussed further in this thesis as an objective. These are discussed in detailed steps in the next chapter along with the prompts used respectively and the ways it helps quality assurance team to reduce the manual effort and also the stakeholders communication using AI tracking and client satisfcation. The routematic map also provides the details of critical functions, its uses and related areas.

AI Integrated Project Management tool:

The thesis uses click up as a PM tool to perform project management activities. It has NLP(Natural Language Processing) making it easy for the users to get information by interacting with AI assistance. It also has ML(Machine Learning), which performs actions based on the provided rules and also updates automatically based on project activities. The

default available version of the software is capable to provide hands on experience in the initial stages of training to the project managers/employees who are at the learning stage. The AI assistance used in this tool helps even stakeholders to gather required information about a specific PBI and to identify if there are any duplicate entries created both in terms of PBI as well as bugs. A single tool to handle project management activities, quality assurance and also for stakeholders. The bug tracking helps to avoid the occurrence of the same bugs in the future thus increasing the quality of the product. The organization has to decide for which project these tools could be used depending on their budget, complexity and usage in the market. As a result the use of this tool not only reduces manual effort but also increases the efficiency and growth of the organization. The client satisfaction is also attained with the help of this AI enabled PM tool when the products are delivered on time with no major/critical bugs.

AI's effect on project management:

As the survey results shows that use of AI shows improvement in project activities and also in project management even for quality assurance team to improve the quality of the product. The below mentioned are factors which will be considered when AI enabled project management tool is adopted to perform project management activities.

Stakeholder satisfaction – When most of the manual time taking tasks are automated in complex projects the time is utilized for product development and it brings satisfaction to stakeholders.

Data Privacy – As per the survey results, majority of the respondents mentioned there is no concern of data privacy.

Internal Communication – Teams collaborate and gather information via AI assistance instead of reaching out to people where wait time is more.

Impact in productivity and efficiency – When processes are automated project managers and team members could concentrate on the quality of the product to be delivered.

Barriers – The cost of implementing AI within organization needs to be considered along with the selection of projects to integrate AI in project management. It needs to be taken into consideration that the use of AI is within the organization's policy and there is no way for any such violation to occur.

Challenges – To train employees to handle AI enabled project management tool in an effective manner and also to convert the existing projects which are handled manually to automated ones. It also needs to be considered that which projects need to be handled using AI, based on the project allocated for that specific project.

Initial Monitoring – It is important for the management to monitor the projects and other activities when AI is implemented in the starting stage of the project.

Risk Management - When any of the tasks is not completed within the allocated time a risk warning is triggered to the watcher of the project, indicating the risk associated with that particular task in the sprint. This helps project managers to have a look on the particular item and make the necessary changes. If email triggering is not enabled this will add a manual effort.

Thus, the survey results obtained from two different surveys are discussed here with a comparison between traditional project management and AI-enabled project management. As an overview of the survey results collected from different participants it is understood that the use of an Artificial Intelligence-enabled project management tool helps the organization's project management in different ways thus reduce the manual efforts, increasing efficiency and growth. This also reduces human-prone errors. The results of this discussion, along with the implementation, are provided in the next chapter.

CHAPTER V: DISCUSSION

5.1 Discussion of Results

This chapter discusses the results for the objectives in this research work with practical AI-enabled project management tool-based automation results. It also has the results of the literature review, and a comparative analysis is done on how project management operated before the use of the AI-enabled tool and post the use of AI AI-enabled tool.

5.2 Discussion of Research Question One - Analysis of PBIs on the board to improve the overall performance of the project by automating repetitive tasks

In a hybrid approach the product is broken into smaller pieces, and the discussion happens involving both top level management and employees to avoid a communication gap. The discussion points are collected from both of them, and further decision is made. An agile framework with scrum includes a product owner, scrum master and developers with a 2-4 week planned sprint which occurs with sprint review, sprint retrospective and sprint planning. The product backlog items are the pillars of a sprint. These product backlog items are created by the product owner upon discussion with the business over a PBI grooming meeting, which occurs on a consecutive basis and from this sprint backlog items are picked up. The following are the steps involved in PM, which are handled manually in the traditional way of project management, and now it is being automated using AI AI-integrated project management tool.

Folder creation for task and document upload:

In an Agile methodology with a scrum framework, during planning PO will create PBIs and allocate the sub-tasks as required. A normal project management tool doesn't support the advantage of creating folders but, AI integrated Click up tool helps to create

folders, as shown in Figure 22, which makes it easy to add the related PBIs under the specific folder. This gives easy understanding for team members and also easy tracking during every sprint, and shows only a smaller count when it is viewed as a folder. The document related to that task, along with the acceptance criteria is added under the specific task which makes the visual easy.

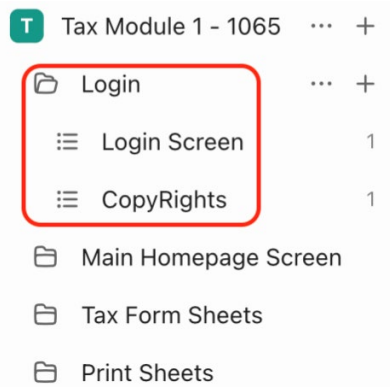


Figure- 22: Folder creation using Clickup

Sub-task creation with Assignee:

During planning, once the task is created and made as either “committed” or “in progress” an automation is written to create a subtask along with the assignee to the subtask.

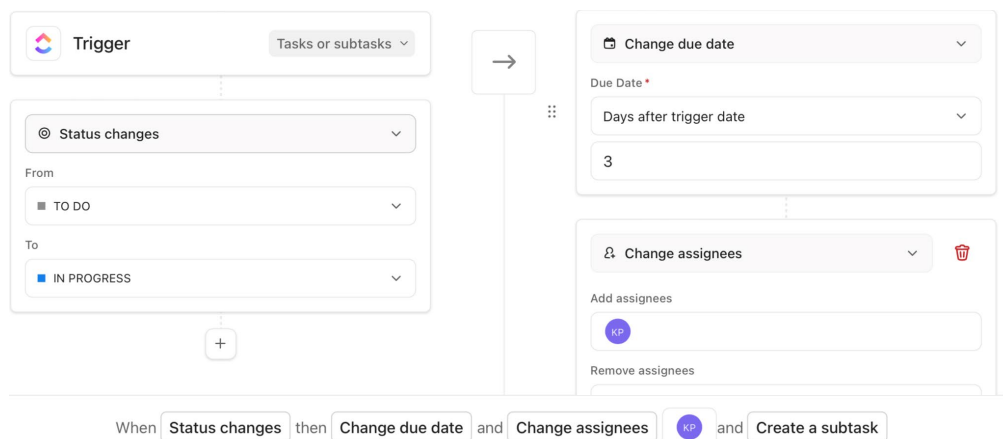


Figure- 23: Sub-task creation with assignee using Clickup Automation

priority and due date as mentioned in Figure 23. This reduces the manual effort for project managers to create a subtask for development or quality assurance when the previous task is completed and is done by continuous monitoring. Additionally, if required, even priority could be added in the above automation as per the requirement. Once the tasks are created there is an email triggered automatically to the respective assignee. In a similar way once all the sub-tasks are completed the main task is made complete automatically. This reduces the manual efforts for product owner to close the completed PBIs before sprint planning in order to prepare the sprint review document.

Acceptance Criteria:

Acceptance criteria for each PBI is written by the business when planning occurs. Using AI Assistance when the correct prompt is provided to get the description/acceptance criteria of a particular task, it provides the details of that specific task for project manager.

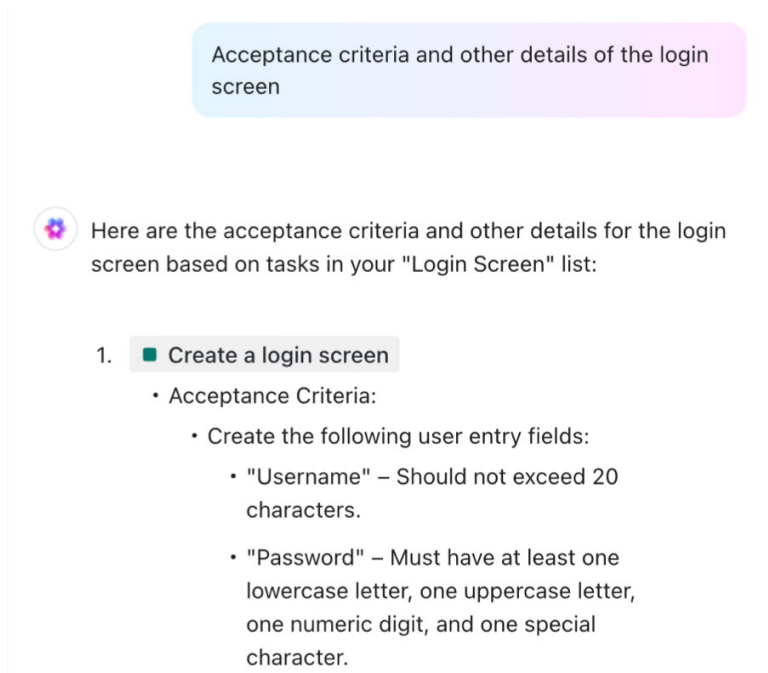


Figure- 24: Acceptance Criteria using ClickUp up AI

as shown in figure-24. This reduces the manual effort to search for a task and look into the acceptance criteria. This is time-consuming when there are multiple tasks, which makes it difficult to figure out the task from the list.

The AI assistance also shows the in-depth details of the task for its status, as shown in Figure 25, and also provides details if any duplicate task is created, which reduces the manual effort to track each and every task manually to find the duplicate entries in the traditional method. This helps not only internal team members but also stakeholders to gather information about a specific task when attending any grooming meeting or meeting with management level.

- Create a login button that is enabled only when both username and password are provided.
- 2. ■ Create login screen with username and Password - Development
 - Status: Complete
 - No additional acceptance criteria or details provided in the task.
- 3. ■ Create login screen with username and Password - QA
 - Status: Complete
 - No additional acceptance criteria or details provided in the task.

Figure- 25: Task Details using Clickup AI

Status of Task in Dashboard:

To prepare the sprint review document or to attend any meeting with stakeholders, the project managers require the details of the PBIs which are open and closed and also need to know the PBIs which are not unassigned due to some business needs, for which

the dashboard plays a major role. The task tracking dashboard in the traditional method shows the tasks which are under the status of Todo, Inprogress and Done whereas AI enabled PM tool additionally shows the tasks assigned as per the assignee and also open task by assignee. The figure-26 shows the task which are inprogress, completed and unassigned.

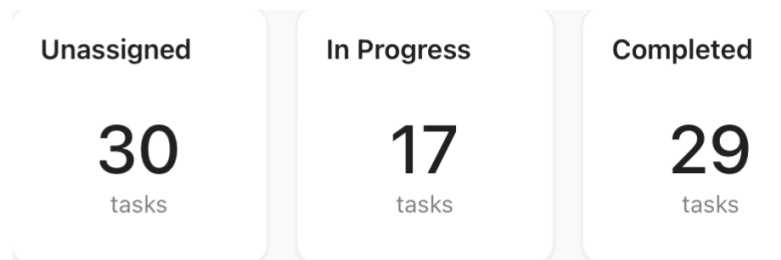


Figure- 26: Status of tasks using Clickup

Task Dashboard and Workload status Dashboard:

In order to track specifically based on assignees the figure-27 shows the dashboard,

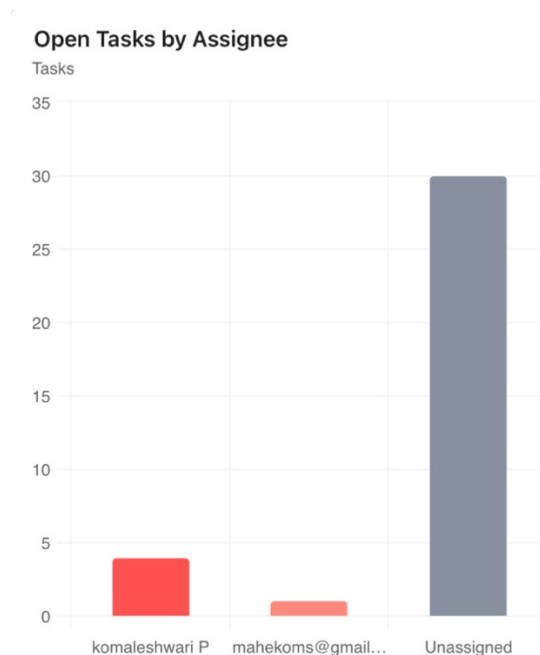


Figure- 27: Task Dashboard in Clickup

which holds the tasks which are open based on a specific resource.

The dashboard also shows the workload of the tasks according to their status with a colour differentiation. The percentage for each status is also mentioned for easy understanding. These status includes todo, open, blocked, inprogress, assigned, need info, code review, testing, onhold, completed. The figure-28 shows the workload status for different levels of tasks.

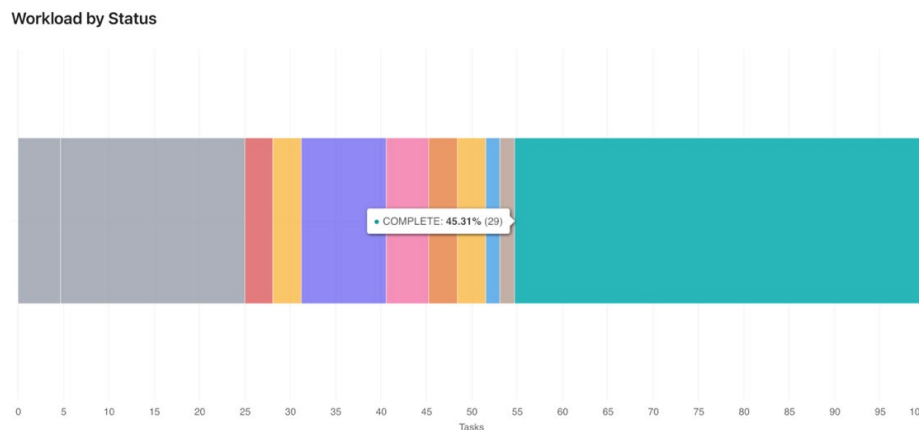


Figure- 28: Workload status dashboard

Risk Management:

Traditional PM requires continuous monitoring of PBIs on daily basis. If there is

Tasks Due This Week or Overdue

Refreshed 16 mins ago

Due date Subtasks Columns 2 Filters Closed Search... Customize

Overdue 4 Add Task

Name	Assignee	Due date	Priority
Tax Module 1 - 1065 / Login / CopyRights Display a copyright message 2	KP	Jun 6	Urgent
Tax Module 1 - 1065 / Print Sheets / Print to Excel Print all sheets to excel 3	KP	Jun 7	Normal
Tax Module 1 - 1065 / Main Homepage Screen / Ad- Admin Access - All Modules 1	KP	Jun 8	High
Tax Module 1 - 1065 / Tax Form Sheets / C Series Schedule C1 Sheet 3	KP	Jun 10	

Figure- 29: Risk Management using Clickup

any overdue it needs to be identified manually by project managers whereas, in AI enabled PM if there is any task which are “overdue” is shown under risk in the dashboard along with the latest activity. This even triggers an email to the owner of the task when an automation to trigger email is provided for the PBI as shown in figure-29.

Email Triggers and Private Sharing:

This AI tool triggers email to the project manager when an auto watch is added under the owner details as shown in figure-30. The email is triggered when performing actions like creating a task or a sub-task, changing status of a task, adding assignee to a task, change in due date of a task, when comments are updated to a task by mentioning the assignee in the comment section and whenever a form is submitted. Additionally even automations are written to trigger emails when custom fields are edited/updated. This makes the tracking easy for project managers. In case of an assignee to a specific task when

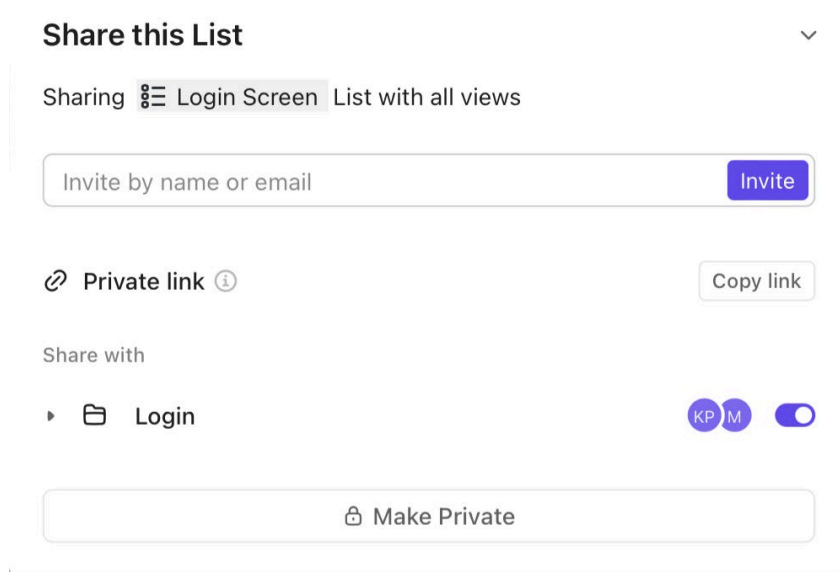


Figure- 30: Email Triggering in clickup

email is triggered the assignee is notified about the task which later helps the resource to go through the task details using AI assistance thus making the resources aware of the newly assigned task.

In addition to the email triggering there is an updated option available which is the private sharing option, which helps to share few important PBI details only to respective resource either via a link or sending invite to the resource via email. The only manual task performed here by project manager is providing the details of the resource. This feature is not available in traditional PM method and it helps to secure confidential details from others.

Automations in Clickup:

There are different automations available for communication, create and complete, dates and time, task management, integration. A few of them are discussed below with their automation prompts. Usually product owners before planning meeting within a current sprint will move the completed task manually. But, this is automated by using the automation prompt mentioned in the figure-31 which reduces the manual effort for product owners/project managers in moving the items.

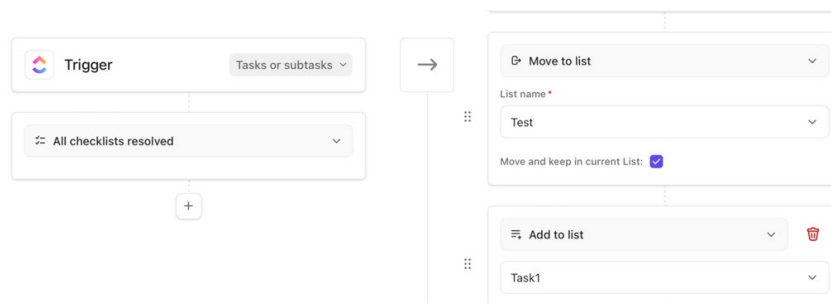


Figure- 31: Automation for sprint planning

The tracking time is also automated by providing the number of days before/after the start of the task and by using the below prompt depending on the hours and the assignee is also added to the tracking prompt as shown in figure-32. This further reduces manual efforts for project managers in tracking the time. When these are taken care via automation then the time is utilized for other process to develop the product.

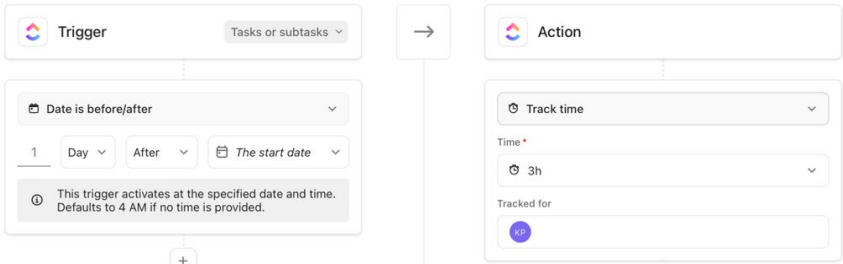


Figure- 32: Automation of tracking time using clickup

Timesheet Tracking:

There is also timesheet tracking as shown in figure-33 for each task in AI enabled PM tool which helps project managers to track the time spent which in turn helps to manage the task and know the difficulties of each task. The employees time spent on each task is tracked which is not available in traditional method. This helps to avoid the delay in completion of the task as it is tracked on hourly and on weekly/daily basis. This report is

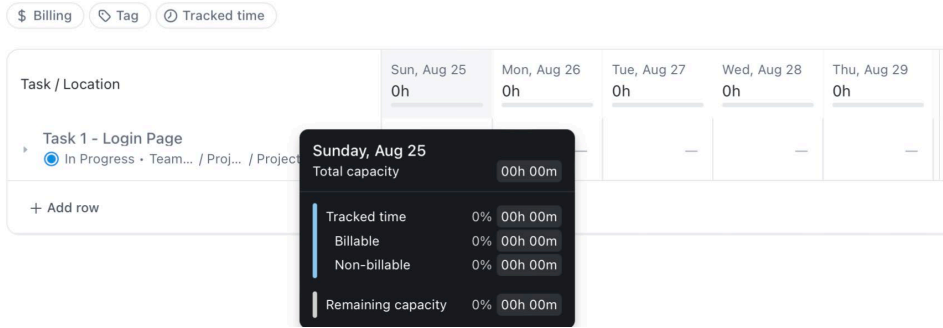


Figure- 33: Timesheet Tracking using Clickup

available under the Gantt which is shared to stakeholder for their reference. In traditional method all these tracking is done manually in an excel sheet by project managers.

Concept Map:

In traditional PM there is no concept map whereas in AI enabled PM this is useful as it provides of what is the main concept, idea and final results through a diagramatic format as shown in figure-34. The project manager need to prepare the concepts, ideas and results once the project overview is completed and this occurs along with team's collaboration. For project manager's to prepare this chart they need to understand the business concepts and they can add the flow as required. This is feasible and also could be shared to stakeholders and other team members once the details are explained over a call and it is one time process. Even a newly added resource can understand the overview of the concept with the help of this flowchart. If the same needs to be implemented in traditional method then project manager has to prepare a flowchart on the whiteboard during planning and share it across team members which is a time consuming task.

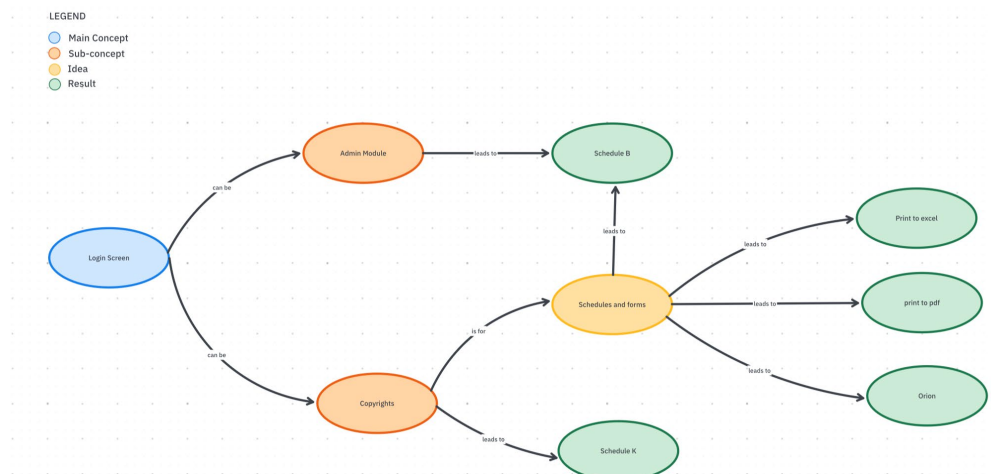


Figure- 34: Concept map in clickup

Eisenhower matrix:

This matrix is unique and is not applicable in traditional method. The project manager has to add the important and urgent task as shown in figure-35 to this board instead of dropping emails or adding it under the task description . Incase if there are multiple tasks it makes it difficult to dig into each task to understand the details. This matrix holds the details about importance of the task in a single place and also notes could be

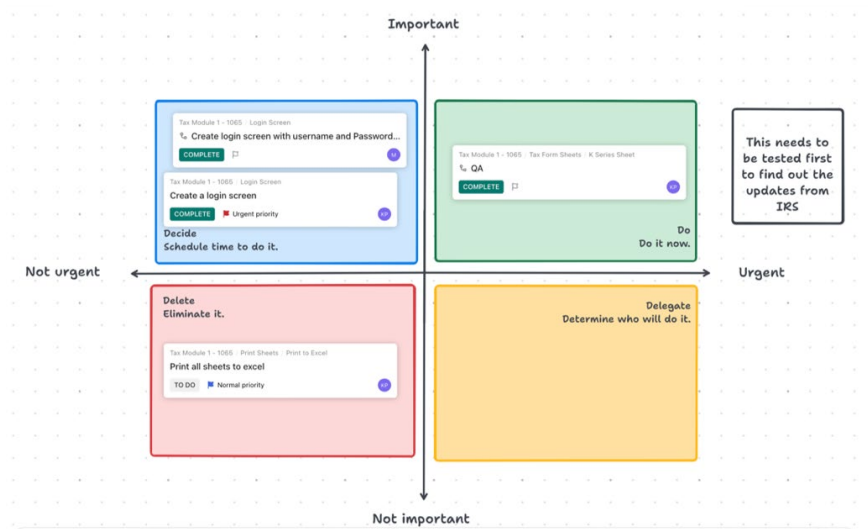


Figure- 35: Eisenhower Matrix in clickup

attached as shown in figure-5.14. This helps the team members to focus on the task which is urgent and important with priority. Project managers add urgent, important, not urgent and not important PBIs with required number of notes attached.

AI Assistance and Stakeholder Communication:

The key feature in AI enabled PM is the AI assistance which provides all the details of any task and it also triggers email for the respective prompts which makes it easy for the stakeholders to collect information without the intervention of project manager's. Usually

stakeholders belong to onshore and there is timing difference which leads to delay in collecting information from project manager's in case of emergency which is a drawback in traditional method. This drawback is achieved using the AI assistance in click up tool.

Results of previous year study:

The thesis analyzed 50-60 previous research papers in systematic literature review based on project management using AI and hybrid methodology. Since AI is evolving technology in PM the search criteria to analyze previous year papers include few with detailed explanation. The research papers analyzed shows the use of AI over traditional method is beneficial as it reduces the manual work load and also increases the growth with increased productivity. These papers have not used any specific tool to demonstrate the application of AI in PM and they doesn't provide a framework to provide training to employees on AI due to which it is quite difficult for project managers/resources to cope with AI in PM. But overall in planning, decision making, risk management, resource allocation, stakeholder communication and feedback the AI integrated PM tool plays a vital role than traditional method though it has its own drawbacks. Additionally, even quality assurance team gets benefits on using the AI which reduces their manual ways of testing. This increases the customer satisfaction and increases the growth of the organization.

Comparison between before clickup and after clickup:

The below comparison is done between traditional project management method and AI's use in project management with the tool chosen in this research work as per table-3.8. Previous research papers are analyzed to understand the traditional project management areas which requires manual efforts.

Table- 8: Comparison of PM activities before Clickup and After Clickup

Area Covered	Before Click Up	After Click Up
Folder creation to group PBIs	Folders cannot be created to add PBIs. PBIs are added as individual task with multiple sub-task	Multiple PBIs can be combined into a folder. Single space can have multiple folders
Sub-Task Creation	Sub-Tasks are manually created by project managers	Automation is performed to create sub-task once the previous task is completed
Acceptance Criteria	Task needs to be opened in order to view the AC	With the help of AI assistance the details are fetched
Closure of PBI	PO manually closes the PBI once the sub-tasks are closed	Automation is performed to close the main task once sub-tasks are closed
Dashboard Tracking	Dashboard shows only task status	Dashboard holds task status, workload, summary
Timesheet tracking	This is performed manually using excel sheets by project managers/scrum master	AI provides the time spent on each task by the assignee along with the date
Map & Matrix	There is no Map and Matrix	Visual representation of the sprint/space is given to team members

Communication	Informations for sprint details are provided by project managers	Through AI assistance stakeholder fetch the required information
Quality assurance	Test cases are written manually and bugs are tracked manually	AI generates test cases with proper prompt and requirement document

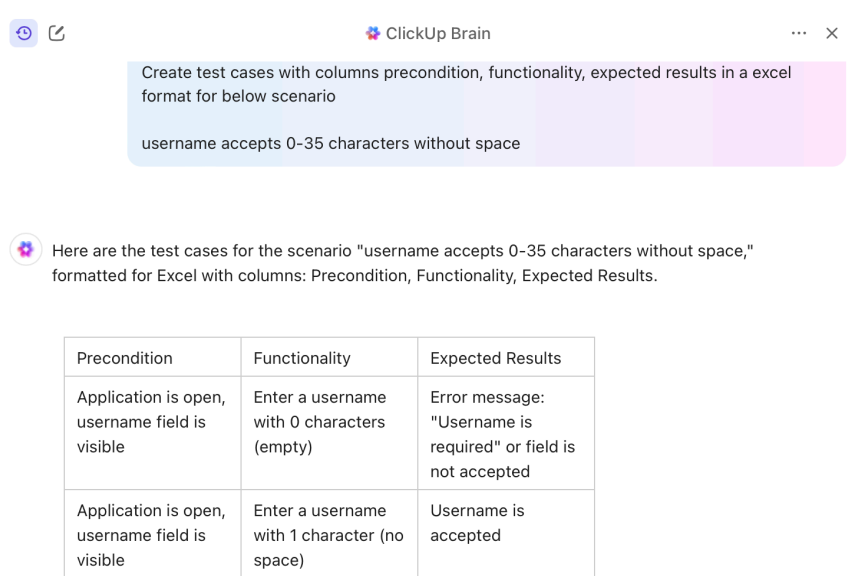
5.3 Discussion of Research Question Two - Bug detection and other quality assurance activities to improve the quality of the project

As the survey results shows that AI is more useful for quality assurance team as testers have more manual efforts than PM. The below are areas covered using AI tool along with the available automation which benefits quality assurance. Quality assurance is directly related to the quality of the product, if this is handled in a right way the quality of the product improves as a return the stakeholder expectation is satisfied and customer satisfaction is also achieved.

Test case creation:

Usually quality Assurance need to write test cases manually either through excel or directly on the PM board. Using AI enabled PM tool the QA has to provide a prompt similar to figure-36 stating “Create test cases with columns precondition, functionality, expected results in a excel format for below scenario” and either upload the user story document or provide the requirement from PBI description. Once the results are produced the QA has to download and upload under the task. This reduces lots of manual efforts for the testing team which could be utilized for functionality testing/regression testing. This test case is exactly similar to the manually written ones. The columns specified in the prompt varies depending on the organization’s pattern of writing test cases or test

scenarios. Both positive and negative test cases are generated in this way. On an average a QA spends 2hours to write test cases for a medium task but with AI within 10mins the task is completed.



The screenshot shows the ClickUp Brain interface. At the top, a prompt is entered: "Create test cases with columns precondition, functionality, expected results in a excel format for below scenario" followed by "username accepts 0-35 characters without space". Below this, the AI-generated response is shown, starting with "Here are the test cases for the scenario 'username accepts 0-35 characters without space,' formatted for Excel with columns: Precondition, Functionality, Expected Results." Below the text is a table with three columns: Precondition, Functionality, and Expected Results. The table contains two test cases.

Precondition	Functionality	Expected Results
Application is open, username field is visible	Enter a username with 0 characters (empty)	Error message: "Username is required" or field is not accepted
Application is open, username field is visible	Enter a username with 1 character (no space)	Username is accepted

Figure- 36: Testcase Creation using AI

Bug Logging and its automation:

In traditional method the bugs are logged manually along with assignee and manual template is created to fill all the required details. For few projects email communication is done to report bugs which is further more added manual effort to include all the steps to reproduce in the email. In AI enabled project management tool there are default templates available with basic details like task id, assignee, steps to reproduce, due date, priority, severity. It is not required for a project manager to create a template rather they could make use of available template and make the required changes. This reduces almost the project manager's manual effort and time to create template and track them manually. Using this each sprint will have a bug folder separately to track. Due to this the bugs will not be missed

or the same bug which creates duplicates will not happen again in turn reduces the bug count for a project and improves the quality. Additionally the board shows all the tasks including development and quality assurance under respective status. The only manual effort required here is to chose template and provide the details for the template. The click up tool also provides a fuctionality to add a task in the bug report for the developer to fix them. The automation is used even in bug reports for resource allocation, status changes, due date, closure of bugs.

Bug Tracking with AI assistance:

The status board shows all the task under the respective status so it is not required to manually open the bugs to track them. The task could also be tracked based on the assignees. The bugs created under the template has a unique bug id which is tagged to the repective product backlog item which makes it further more accessible for the project managers to track the bugs in future. In traditional method few of the project still uses email

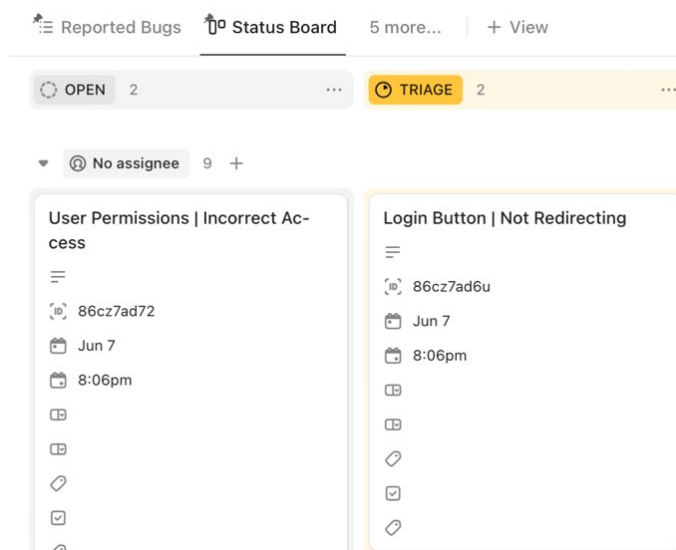


Figure- 37: Bug Tracking using AI

communication to log bugs which makes the tracking difficult in future as it doesn't have a bug id. But using AI assistance which is having NLP, once the bug id is provided the entire details of the bug is displayed even after long gap. This is more useful for the management to track the bugs count to estimate the quality and proceed towards improvement. These bug ids will also help quality assurance team to get the details to make sure that these scenarios are covered in future. In traditional method where project communicates the bug using email it is tedious to find the details of the bugs in future if any information is required due to which even the production bug count might be missed. Using AI when project managers present the metrics to management/stakeholders they use the tracking with status which provides accurate results as shown in figure-37 without missing any bugs logged which helps to determine the quality of the product.

Stakeholder's bug report:

The AI assistance helps stakeholders to pull out the reports within seconds to present them during skip level meetings or management level meetings. It is easy for them to take care of production bugs and make sure that the users issue is fixed on priority and prevent from further escalation. This also helps to take care that these users issues does not occur in the future by maintaining a metrics with this list of production issues. As a result the bugs are reduced and in turn quality increases.

5.4 Discussion of Research Question Three - Discussion on framework to train employees

As per the survey results and also from the previous year study it is clear that there is no framework mentioned to train the employees in a stepwise manner. The thesis provides a stepwise process to train the employees on handling the AI and implement within the project without any hurdles. The framework is based on ADDIE instructional

model which follows analysis, design, development, implementation and evaluation. The step by step process derived based on ADDIE instructional model is structured practice used globally. These steps may reduce the time taken for employees to train on AI. Once project managers are trained in this manner for AI then it would be easy for them to train their resources by allocating specific time depending on the team's availability and bandwidth.

Identify Training Needs:

As per ADDIE instructional model this is analysis stage which helps to understand skill gaps and goals. The organization should identify the projects which needs to be implemented with AI in project management and also the technology on which the project managers need to be trained. For this decision there could be a discussion made involving top management, stakeholders, leads of the specific business units and project managers if required along with the team leads input. Mostly long term projects and complex projects need to use AI in project management which saves lots of time and manual efforts. If the organization plan to use clickup tool in PM the technologies listed are natural language processing, machine learning and the software application. Organization should list these technologies before starting to train the project managers in handling the AI for project management as an initial step.

Basic AI concepts:

As per ADDIE instructional model this is design stage which includes planning content. The project managers need to be made strong in the foundation with the understanding of the basic concepts of AI and its terminology. This includes neural networks, machine learning, deep learning, types of AI, prompts and how to use them, how the data processing happens, how the software could be installed as per guidelines. This makes the foundation strong and also avoids the struggle to understand the terms when

started working with AI. This also includes the training on the model evaluation techniques to provide more knowledge.

Technical Skills Development:

As per ADDIE instructional model this is design stage which involves creating hands-on modules. Not all the members of the team perform all the task using the AI enabled project management tool. Depending on their roles and responsibilities the actions are performed and the level of tool is useful. The project managers need to be trained in the overall tool as they will be handling the projects from end to end. For this project managers need to be trained on the basic programming language used, data manipulation and libraries available within the tool. Additionally, the project managers need to be aware of the available framework and there should be a consistency in the framework followed within a business unit so that it is feasible for the management level. Quality Assurance team members need to be trained on how to create test cases, bug logging and tracking of bugs and development team members need to be trained on how to handle the task and sub-task along with the comments section and due date automations. So, project managers play a key role and need to know the entire working procedure of AI as they are handling the end to end process. Once the project managers gain the entire knowledge about the AI tool it is easy for them to train their team members based on their roles and responsibilities.

Data Literacy Training:

As per ADDIE instructional model this is development stage which includes building specific learning material. Post the selection of the tool it is important for project managers to know about the data management skills as how to collect data, clean the data, process the data and analyze the data. They need to know how to club the tasks within a sprint depending on their similarity and functionality. This would help in training the AI models and also to train the resources. Organizations will have a different data policies

which the project managers need to aware of by referring their own data policy documents. This helps in not violating the data policy procedures followed by the organization. This is more important when dealing with financial firms and auditing firms like the big fours Deloitte,PWC,Ey and KPMG who provide main importance and concerns to their data policy. This will avoid further discrepancies regarding data.

Practical Application:

As per ADDIE instructional model this is implementation stage which includes hands-on training sessions. During this training session the project managers should be provided with hands on experience with the real-time projects which will further help them to understand the concepts clearly. Project managers could also come up with case studies when the training occurs which will help them to share these findings to team members as well to provide them more information. There could be COE (center of excellence) sessions conducted to train the rest of the team members either on weekly basis or monthly basis. Organization should take a call for these COE team and sessions.

Feedback and Support:

As per ADDIE instructional model this is implementation stage which includes continuous support. As and when resources start using AI within their project they land up with lots of questions and clarifications which require further discussion with team members. Organizations should offer continuous support and also could collect feedback from employees on their thoughts and ideas to make it more reliable and effective to use AI by others. The collaboration culture and knowledge sharing session could happen within internal teams so that each resources shares their drawbacks and the team discusses about each of them which has a benefit in solving the problem as well as gaining insights from the discussion. The feedback could also be collected from the stakeholders as and when teams start using AI. This feedback helps in providing details to organization about the

progress and depending on which organization decide to whether increase the training or provide more hands-on experience. These feedbacks are managed in a anonymous manner to be effective.

Ethical and Responsible AI Use:

As per ADDIE instructional model this is development/implementation stage. It is important to not only train employees but also to educate them on the data privacy policies, security and the impact towards the society and the organization by suing AI within that project. Using AI is not on the fly it has its own ethics based on the organization policies which each and every employee within the project which chooses to use AI should be aware of. This is achieved either by sharing the policy documents or by gaining knowledge from higher management through a session provided by specific designated person. Each organization will have HRBPs who will be sharing the guidelines of data policy through email or respective portal. These are mainly considered when dealing with data which are confidential when handling in firms like financial, auditing, tax etc where they provide more importance to the data used and collected. When thes policies/ethics are unaware it leads to violation of the policy and may land up even in termination of employment.

Continuous Learning:

As per ADDIE instructional model this is evaluation/improvement stage which helps ti refine skills. Once project managers and other resources are trained in using AI and related AI tool in PM the leraing does not end. Since, AI is evolving technology there will be continuous updated available in the market. Organization provide continuous webinars, conference opportunities to team members and also learning initiatives through mandatory training courses on a continuous manner to employees to keep them updated on the evolving technology and its use. These are shared via a engagement portal handled by each organization to make them reach higher to everyone within the organization. When these

are posted in the engagement groups or committee channels it further more adds discussion by individual employees and helps in gaining more knowledge. Continuous monitoring of these channels also plays a vital role in spreading the knowledge and updates on Artificial Intelligence.

Integration with Existing Workflows:

As per ADDIE instructional model this is implementation stage which is application in real. Once the training are provided to the team members it is important that the application into real projects should be done without any gap. Depending on the role and responsibility of team members starts implementing AI within the existing workflow with available automation it provides them more hands on experience and knowledge about its use. Developers start writing automation which includes to close the development task, adding comments within the task if required, create additional sub-task in there are any DB updates required, add additional hours depending on changes occurred. For quality assurance to develop test cases based by providing prompts with the required documents, log bugs and details with automation, to track bugs. For project managers use the automation for repetitive tasks like planning, task creation, resource allocation, closure, tracking.

Evaluation and Assessment:

As per ADDIE instructional model this is evaluation stage which is measuring performance. There should be continuous assessment conducted for team members either via quizzes, performance review meeting, feedbacks to evaluate their understanding level with AI tools usage and technology. This will show their competency in using AI and helps the organization to plan further training sessions/courses. These are collected anonymously for better and open reviews, which contribute to the organization's growth.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This section includes the summary, what was the motivation and focus to perform this research, along with the implications from the results, the type of data collected from the participants, the participant selection for the survey, the tools used to perform project management using AI and the future path for further research areas to be focused on and covered.

6.1 Summary

As project management plays a vital role across all domains in a corporation, it requires more effort and manual work to proceed, which is performed by project managers. When this manual effort is reduced to some extent with the advanced technology available in the market, named Artificial Intelligence, it would help project managers to utilize the time for other product development activities, thus leading to customer satisfaction and improving the quality of the product. Organization's role is to develop a product as per stakeholder expectations and customer needs, with the provided budget and the mentioned deadline. This involves a team of resources who put efforts to perform these activities, which include planning, estimation, decision making, allocation of resources, development, testing and automation. This is followed in different ways by different organizations using various methodologies. There are two main concepts, named SDLC (Software Development Life Cycle) and STLC (Software Testing Life Cycle). SDLC involves planning, analysis, design, development, testing, deployment and maintenance. STLC involves requirement analysis, testing plan, testcase development, test environment setup, test execution and test closure. Both are involved in the project management process. There are different project management methodologies like agile, waterfall, and Kanban. Most of the organizations follow Agile methodology, which involves a 2–4-week sprint.

The agile team involves the scrum master, product owner, and development team members. There will be a planning meeting conducted before every sprint, and a sprint review occurs at the end of the sprint, along with a sprint retrospective. The purpose of the sprint review is to look into all the completed items in the current sprint before closing and moving to the next sprint. The quality assurance team will provide a demo of the items completed on the sprint board to keep all the team members inline. The sprint retrospective focuses on three questions like “what went well”, “what did not go well”, “what can be improved”. Following this, the sprint planning for the next sprint occurs, starting with the capacity of the team members. Already Product Owner would have placed a few product backlog items on the board post the PBI grooming meeting. Now the actual discussion about the PBIs on board will occur, and manual development and other testing tasks will be created.

From the two different sets of surveys taken, one focuses on how the product backlog items are handled, if there is any spill over to the next sprint and also the manual efforts spent by project managers. Both surveys are taken through Google Forms via online portals to reach participants more easily and quickly. Depending on this, the second set of surveys was taken to collect details on how the implementation of AI works in the organization, along with individual efforts, efficiency, delivery time and stakeholder satisfaction. It has been noted from the survey data that the organization does not have a proper plan and tool to implement AI in project management, and also lags in providing training to employees to handle AI AI-enabled PM tool. Project management generally plays a vital role not only in the IT sector but also in other industries like healthcare, civil, manufacturing, pharma, etc. In general, it involves organizing the items in an ordered way to deliver them on a timely basis. This will not only help to deliver products on time but also help team members to track the progress efficiently. Depending on the results from the survey, this research work focuses on implementing AI in project management, which

will reduce the manual effort and that is utilized to focus on other important development activities. After seeing the survey results with manual process as well as experience in working with the IT sector, there are lots of manual processes involved every time during a sprint planning meeting, as well as tracking the backlog items. In quite a few organizations, there is no proper way of following the backlog items, and there is no proper application of a specific methodology in place. All these drawbacks motivated us to focus on this research to provide the technology usage in project management to reduce the manual efforts to a certain extent, and this comes with the implementation of Artificial Intelligence with machine learning, a natural language processing-enabled project management tool instead of a manual project management tool. Furthermore, more research was performed from the organization's point of view on how to bring this into real real-time application to work on; the thesis provided the framework to train employees on using an Artificial Intelligence-enabled tool. Moreover, working in the IT sector provided me with additional information on the real process followed in the organization through various contacts, which helped to perform this research.

The thesis uses an AI-enabled PM tool for various activities of project management like planning, estimation, resource allocation, communication with stakeholders, dashboard tracking, timesheet tracking, bug logging, tracking of bugs, testcase creation for the quality assurance team, and internal communication with a flowchart/map for better understanding. The thesis has also provided a framework based on the ADDIE instructional model on how to train employees in a stepwise manner within an organization, so that it would be useful for tracking as well as implementing in real scenarios. There is a comparison provided on how the project management works in different stages before the use of AI AI-enabled project management tool and after the use of AI AI-enabled project management tool. There are live snapshots provided from the tool to make it more feasible.

The key point to be noted here for the quality assurance team is the prompt used to fetch the test cases matching the requirements of the product. This will enhance both delivery and customer satisfaction, thus leading to the growth of the organization.

6.2 Implications

There has been research performed in previous years in project management using Artificial Intelligence, but it lags in areas like efficiency, providing training and AI-trained employees to handle the project management. The research thesis covers this gap and provides a framework to train employees in using an Artificial Intelligence-enabled project management tool for better efficiency and delivery. It uses a hybrid model by combining the top-down approach and bottom-up approach along with Agile methodology on a sprint basis. It also shows an AI-enabled project management tool and the activities of project management handled using that tool with the help of ML, prompts and AI assistance available within the tool. There is a comparative analysis provided, which states the project management activities before and after the use of AI AI-enabled tool. For this purpose, the research used Google Forms to collect the survey as it is a feasible way to reach more participants and connections using online networking platforms.

The data collected from the Google form from participants working across different industries and at different levels with mixed experience states that there are more manual efforts in performing project management. It also shows the areas where Artificial Intelligence brings better turnaround when implemented. Most organization face hectic time management, especially during the production release period, and a flaw occurs in the management of product backlog items. This is taken care of when an Artificial Intelligence-enabled project management tool is used, as it sends email notifications when the deadline for a task is approaching or when the due date is missed. The manual effort which is required here is reduced and utilized for other tedious production release activities. Thus,

the use of an Artificial Intelligence-enabled project management tool helps organization to manage the board items in an effective way and also reduce manual effort, thus contributing to more innovations. The AI-enabled project management tool also tracks the bugs logged by the quality assurance team, which helps to reduce the occurrence of those bugs in future. This, in turn, helps to deliver the products with fewer production bugs, leading to full fulfilment of stakeholder expectations and client satisfaction. Additionally, the stepwise training process to train employees in project management using Artificial Intelligence has also raised the standard of the organization in implementing AI. The usage of AI in the industry keeps growing in all ways. The implementation in project management helps to keep these records for future use when it is required to revisit a specific sprint in case of an emergency, thus saving the search time for employees. Not all employees stay on the same project for a long duration of time, and it is difficult for a new project manager to catch up on all the items within the project in a short span. The use of AI AI-enabled project management tool used in this research work will have a flowchart and a map with details related to urgent product backlog item and their corresponding dependencies, which helps to grab things at a faster rate.

The use of Artificial Intelligence enabled project management tool helps the organization reduce manual efforts in all possible ways and also provides more exposure to employees on the booming technology of Artificial Intelligence. This also provided an opportunity for the organization to further extend the usage of Artificial Intelligence within the organization based on the specific project purpose. One of these implementations is currently applied in practice, which is the test case creation using AI, which reduces the most manual efforts in writing test cases, either using Excel or via a manual project management tool. For the quality assurance team, test case creation is one of the major time-consuming tasks, to analysing the requirements first and then proceeding with writing

positive and negative scenarios based on the requirements. The use of Artificial Intelligence creates the test cases matching exact business requirements with the expected format and details along with column headings and pre-requisites. This includes both positive and negative scenarios based on the requirement document used. The time saved with this process is utilized by quality assurance team to concentrate more on the quality testing thus helping development team to find the loop holes before it goes to production release phase or any such automation scripts if required. This is approved by stakeholders and other management as it brings efficiency and also improves the product.

6.3 Recommendations for Future Research

The research undertaken in the thesis uses hybrid model with Agile methodology with an Artificial Intelligence enabled project management tool named Click up to reduces the manual efforts in project management which includes task and sub-task creation, estimation, resource allocation, tracking of PBIs, dashboard, bug logging with details, test case creation, internal communication, stakeholder communication, acceptance criteria, notification for overdue, email notification for required process and closure of PBIs. In this the development codes are manually merged either using GitHub repository or Jira depending on the management tool used within the project and also the automation scripts written by quality assurance is also manually triggered and is not integrated with the AI enabled project management tool along with the integration of CI/CD pipeline. The code standard could be analyzed using Artificial intelligence and merge them to repo automatically without manual intervention as Artificial Intelligence be more precise and analyze the standard level by providing the reports. These areas could be focused in future using Artificial Intelligence so that it helps development team as well as project managers in reducing the manual efforts further more. If these are taken care, as a whole the project management will fully utilize Artificial Intelligence in all aspects thus reducing the total

manual efforts taken for project management and also improves the delivery further more bring benefits to organization by increasing the growth.

The use of Artificial Intelligence not only useful in corporate but also in other industries like health care, pharma, civil, manufacturing as all industries have project management. The difference applies in the way it needs to be implemented according to the industry depending on which the AI works. For better, organization can prepare use cases in the initial stage to implement using AI and further could be extended based on how that works and reduces the manual efforts by increasing the efficiency. The implementation of AI across industries will burn down the manual time taken process which in turn provides more benefits to the organization revenue and growth, as Artificial Intelligence is a booming technology.

6.4 Conclusion

The purpose of this study is to understand the organization project management process through a traditional approach, along with areas covered through the approach, via a Google Form survey. It also covers the product backlog item details and testing details, including the tracking of bugs. This survey includes participants from all levels, including analysts working in project management. Based on this, another set of surveys using Google Forms was conducted to gather data on the Artificial Intelligence in project management, including the challenges. This survey was sent only to senior resources working in project management having Artificial Intelligence experience. Resources having PMP, Scrum certification is considered an additional advantage. Both surveys are shared through an online platform to connect with participants more easily and gather data. Previous year research papers are also analysed to find the gap in project management and in AI implementation. A comparative analysis is provided covering the areas in project management.

It has been noted that most organization do not follow a proper approach and methodology in project management, which leads to delays in delivery and spill over of product backlog items. This thesis follows a hybrid model approach, which combines a top-down and bottom-up approach with a specific Agile methodology following 2-4 weeks of a sprint. It uses an AI-enabled project management tool named ClickUp to perform all the project management activities. It has an AI assistance which helps to gather details regarding a task at any point in time from any sprint. The tracking of tasks and reports is also prepared using the tool, which shows the details task-wise and even resource-wise. The email triggering feature is more useful for receiving emails for any operation performed, depending on the automation query setup by the project managers. This reduces most of the manual efforts of project managers which is utilized for product development activities. It helps to improve the growth of the organization as well as provides more opportunities for innovation. This thesis provides a stepwise framework to organization in order to train the employees to handle Artificial Intelligence enabled project management tool. Project management plays a vital and key role across all organization this implementation is useful in all aspects thus covering the gaps from previous research. Stakeholders can track the product backlog items without project managers involvement to confirm the progress to meet the product delivery within the allocated time meeting the requirements. In future if any information is required it could be fetched by providing the appropriate prompt with help of AI assistance. Additionally the comparative analysis provided shows the clear picture of the tool usage in different areas of project management. This not only benefits the organization but also provides satisfaction to stakeholders by meeting their expectation and also provides client satisfaction. The future recommendation for this research is also mentioned for upcoming researchers to proceed further thus making organizations benefit the maximum efficiency and productivity.

APPENDIX A

SURVEY COVER LETTER

The research work used two sets of google form survey to collect data from different level of participants from Analyst to senior level and also considered participants with PMP, Scrum certificates for Artificial Intelligence in PM survey. One set of survey includes participants from Analyst to senior level and the another set of survey includes senior level participants additionally who earns certificate like PMP, scrum Alliance and other Agile,Scrum related certificates. The survey is collected from participants from different organization and the cover letter for the survey is mentioned below.

Cover Letter for the survey conducted for Traditional Method of Project Management

Dear Participant,

I invite you to participate in this survey which helps to gather insights of understanding the traditional approach and its challenges in project management. Your participation is important as it provides the required data to proceed further research.

Survey Details

The details for the survey are mentioned below,

Purpose: The purpose of this survey is to examine how project management works under various fields using traditional approach with manual efforts along with its challenges and time taking process, based on which decision is made on how AI will improve the project management.

Survey Length: The survey will take 10-15 mins to complete

Confidentiality: Your response will be maintained strictly confidential and the anonymity will be maintained throughout the study.

Returns for Participants: As we value your participation, I would share the findings of the research for your reference once the research is completed.

If you are willing to participate in the survey, we request that you take up the following survey questions. Your role in this survey is to answer the set of questions below about the project management methodology and how the process is carried out. We value your time, effort, and your data will be used for this research purpose.

If you have any concerns about the survey, please feel free to reach the researcher at koms0211@gmail.com (or) komaleshwari@ssbm.ch

Thank you in advance for your participation in the survey. Your contribution and inputs are appreciated.

Sincerely,

Komaleshwari P.

Cover Letter for Survey conducted for implementing AI in Project Management

Dear Participant,

I invite you to participate in this survey which helps to gather insights of using Artificial Intelligence enabled project management over manual process.

Survey Details

The details for the survey are mentioned below,

Purpose: The purpose of this survey is to examine how project management works under various fields using AI and its challenges for organisation based on which decision is made to improve the project management process using AI with a AI enabled PM tool.

Survey Length: The survey will take 10-15 mins to complete

Confidentiality: Your response will be maintained strictly confidential and the anonymity will be maintained throughout the study.

Returns for participants : As we value your participation, I would share the findings of the research for your reference once the research is completed.

If you are willing to participate in the survey, request you to take up the below survey questions. Your role in this survey is answering the below set of questions about the project management with implementation of Artificial Intelligence along with its challenges and areas to be implemented. We value your time, effort and your data will be used for this research purpose.

If you have any concerns about the survey, please feel free to reach the researcher at koms0211@gmail.com (or) komaleshwari@ssbm.ch

Thank you in advance for your participation in the survey. Your contribution and inputs are appreciated.

Sincerely,

Komaleshwari P.

APPENDIX B

INFORMED CONSENT

The research work used two sets of Google Form surveys to collect data from different levels of participants, from Analyst to senior level. The participant's consent form is mentioned below for both surveys.

Consent Letter for the survey conducted for the Traditional Method of Project Management

You are invited to participate in a research survey conducted by Komaleshwari P. The purpose of this survey is to examine how project management works under various fields using a traditional approach with manual efforts, along with its challenges and time-consuming process, based on which decision is made on how AI will improve the project management.

Your participation solely depends on your own interest, and you may choose to stop the survey at any point in time without any penalty. The survey takes 10-15 mins to complete.

These responses from all the participants will be kept confidential, and the identities will not be revealed. The information provided by participants is collected only for academic purposes to analyse the data.

Consent Letter for the survey conducted for implementing AI in Project Management

You are invited to participate in a research survey conducted by Komaleshwari P. The purpose of this survey is to examine how project management works under various fields using AI and its challenges for organisations, based on which decision is made to improve the project management process using AI with an AI-enabled PM tool.

Your participation solely depends on your own interest, and you may choose to stop the survey at any point in time without any penalty. The survey takes 10-15 mins to complete.

These responses from all the participants will be kept confidential, and their identities will not be revealed. The information provided by participants is collected only for academic purposes to analyse the data.

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