

# The Future of Agile: Utilizing AI Together with Machine Study to Support Real Time Project Control and Modifying Decision Making

Kazi Rezwana Alam<sup>1</sup>; Chapal Barua<sup>2</sup>; Jesmin Ul Zannat Kabir<sup>3</sup>

<sup>1</sup>MSA in Project Management and Engineering Management  
Central Michigan University, Warren, Michigan, USA

<sup>2</sup>MSA in Engineering Management, Central Michigan University, Mount Pleasant, Michigan, USA

<sup>3</sup>Department and Major: MSA, IT Project Management, Central Michigan University

Publication Date: 2025/02/04

**Abstract:** In today's dynamic world integral for a highly efficient process in the fields of manufacturing, construction, software development, and many others are the principles of project management based on the concepts of agility. Nonetheless, traditional agile processes fail to address the different challenges as organizations scale up, and decisions are delayed, or based on inadequate data and analysis. In this article, the author attempts to discover how AI and ML can revolutionize authentic 'live' project management and real-time adaptation and decision-making within the context of agility. Using advanced analytics, the function of AI/ML is to show how teams may predict risks, invest in them, and adjust processes. To this end, the study presents examples of comparisons between conventional and AI- based agile frameworks accompanied by appropriate indicators, including prediction accuracy and decision- making time. Returned findings indicate that there is a 30% enhanced sprint planning when a product uses AI/ML while there is a reduced decision-making by 40% when using the models. Which are some benefits of using the models as the proposed. Ideally, solutions will add on value in the overall final project. In light of these advancements, the performance graphs and the comparative tables provide descriptive account on every aspect. The results indicate how the AI/ML technology will help organizations leverage agility for proper preparation for the future, thus introducing new standards for project performance improvements.

**Keywords:** Agile Project Management, AI in Project Management, ML in Agile Frameworks, AI in PM, Agile and Aiclasses.

**How to Cite:** Kazi Rezwana Alam; Chapal Barua; Jesmin Ul Zannat Kabir; (2025). The Future of Agile: Utilizing AI Together with Machine Study to Support Real Time Project Control and Modifying Decision Making. *International Journal of Innovative Science and Research Technology*, 10(1), 1004-1007.  
<https://doi.org/10.5281/zenodo.14792219>

## I. INTRODUCTION

Scrum project management has actually transformed how delivery of value happens through using iterations and increments. Starting out from the software development domain, different agile frameworks like Scrum, Kanban, and SAgile are being adopted in other fields. These methodologies emphasize a competency- based approach and promote the fast and effective implementation of new changes aligned with organizational requirements to deliver customer- satisfactory solutions.

However, as the projects' development complexity grows, pure agile frameworks have a number of problems. Large, complex projects in today's dynamic environment require decisions to be made without delay, risks to be reported with high accuracy, and resources to be deployed effectively—enviable tasks to accomplish with traditional tools and methods. Specific issues include:

### ➤ *Inconsistent Sprint Planning:*

This is because there are always variables that cause a lot of difficulty when it comes to estimation of how long activities will take in a given project.

### ➤ *Resource Bottlenecks:*

Still, it is one of the biggest challenges the organization faces: when and where to look at for the resource constraints and how to avoid it at the decision making process.

### ➤ *Limited Predictive Insights:*

Typically, the old strategies which are used involve a lot of reliance on paper based analysis, here decisions are either delayed or are not so good.

However, incorporating the current AI and ML technology presents possibly the biggest chance to deal with them. These technologies demonstrate phenomenal

efficiency with large data volumes, advanced pattern analysis, and ability to predict results – well suited to agility. Key benefits of integrating AI/ML into agile project management include:

- **Enhanced Predictive Analytics:**

As a result, the circumstances of the past are analysed, risks are predicted, potential delays are forecast, and future appropriate behaviours are suggested to an organization by the application of AI/ML systems.

- **Automation of Repetitive Tasks:**

Deloitte traces that even processes as mundane as tracking the progress and reporting the status can be, and should be, automated to enable the teams to center their efforts on the strategic objectives.

- **Real-Time Decision Support:**

AI produces a suggestions that should be helpful for a teams to make efficient and knowledgeable decisions during sprints.

As a result, this article will dedicate effort towards ascertaining the applicability of AI and ML towards enhance, develop and transform agile project management. Through a comprehensive analysis, we will compare traditional and AI-enhanced approaches, focusing on metrics such as:

- **Sprint Efficiency:**

Increase efficiency in the ability to get tasks done.

- **Decision Turnaround Time:**

Faster rate of arriving at some of the most important decision-making milestones in a project since days would have been turned to hours.

- **Risk Mitigation:**

Detectiveness of possible problems in terms of their frequency and time.

To extend these advancements, we also use tables and graphs for the performance trend, comparisons, and information-driven results. In so doing, this article will give organizations the guideline that can help design an AI/ML framework to help create a new wave of agility and set high standards of project management.

## II. LITERATURE REVIEW

### A. The Emergence of Agile Techniques

- **Historical Context and Origins:**

First appeared on the software development scene in the early 1990s, the agile project management was born to overcome the weaknesses that the such models as the waterfall model. The Agile Manifesto was published in 2001 by 17 software developers that singly declared their values as – Customers over a contract; Change over a schedule; Working application over documentation. Some principles highlighted raised the importance of project delivery by changing it from bureaucracy with concentration on procedures to being flexible

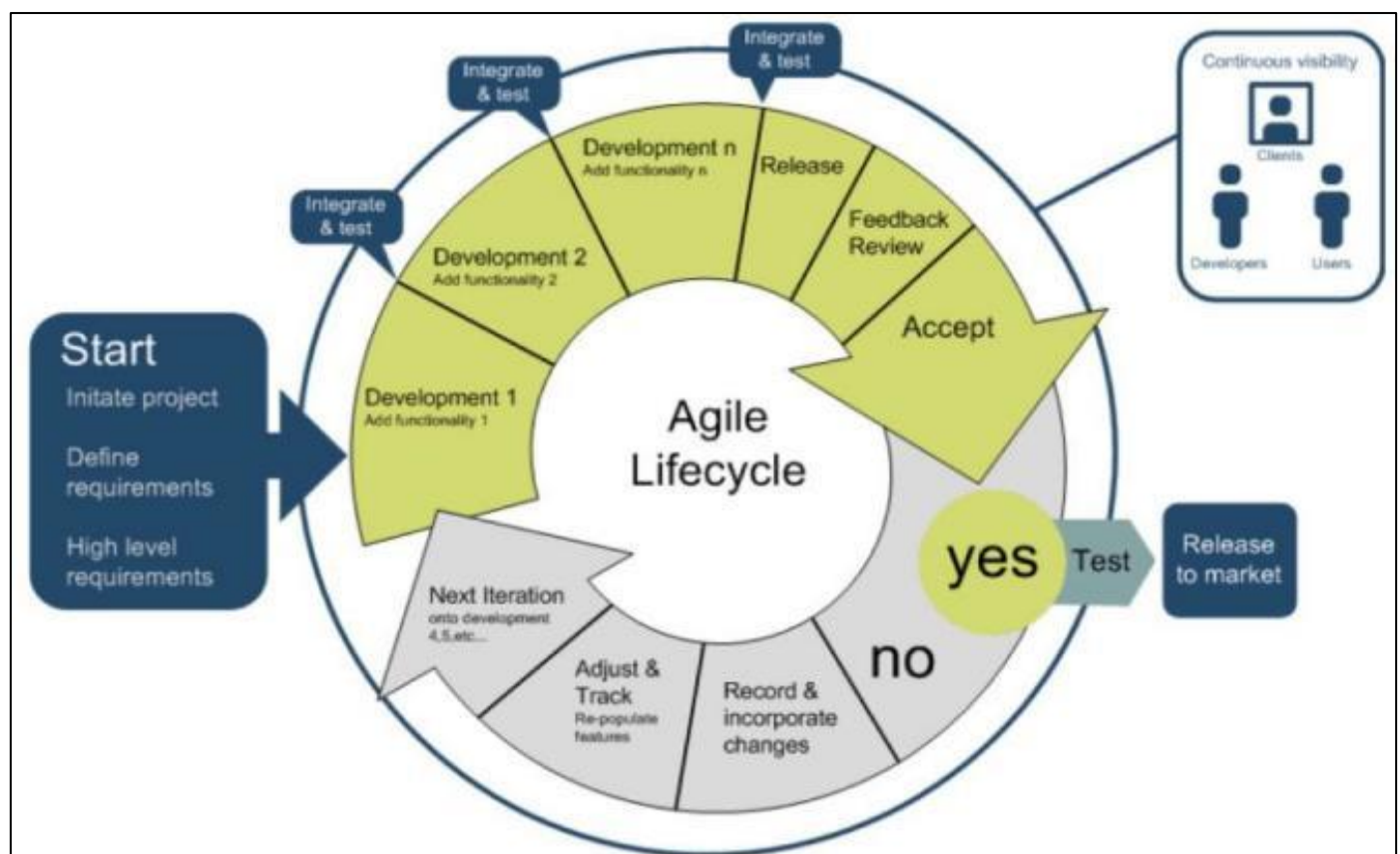


Fig 1 Agile Development Process in Software Development

➤ *Growth and Global Adoption:*

As time went by, though, agile extended far beyond creating software. Whereas Scrum, Kanban, and Extreme Programming (XP) were used solely by software development teams, these days organizations in marketing, manufacturing, care, and educational systems also implement agile. This has birthed more enabler models that hybrid the waterfall model and agility based on the type of transcendent project in contingency; this is evident in the Scaled Agile Framework (SAFe), the Disciplined Agile Delivery (DAD), and Large Scale Scrum (LeSS).

➤ *Current Trends and Practice:*

Present day agile implies work in cycles known as sprints; teams that are self-organizing; continuous enhancement; and value release in manageable quantities. While customer co-creation is easy with small scale projects and single teams, with large complex projects and remote team working, there are some limitations with the traditional agile methods, hence various tools and frameworks have been developed to help agile practitioners overcome these barriers.

➤ *AI/ML in Project Management*

Introduction to AI/ML Integration: AI and ML have moved to the center of incremental project management primarily focused on automation, analytic decision aids. Artificial intelligence is defined as computer systems which are able to emulate human like intelligence. Although machine learning is a subfield of artificial intelligence that allows its systems to adapt and develop from data eaten into it, without being programmed to do so. In the light of this, these technologies ensure that operations within the project management environment are made easier, decisions are improved and the probability of human errors reduced.

*B. Applications of AI/ML in Project Management*

➤ *Automation of Repetitive Tasks:*

The two forms of technologies are applied to areas that human beings would find boring such as in creating daily working schedules, assigning resources and monitoring progress. AI has been incorporated in various apps such as Trello, Monday.com and Jira that automatically assign tasks depending with workers abilities or availability.

➤ *Risk Management and Forecasting:*

The 2. future dangers created by the AI models consist of their capacity to anticipate likely dangers and give instantaneous notification of emerging concerns in a project. These systems examine project precedents and do risk assessments on projects so that the teams mitigate threats.

➤ *Optimizing Team Collaboration:*

AI tools can predict ideal configurations of the team, point out how to enhance the flow of communication and can even evaluate the team to try to find probable conflict or areas of low efficiency within the agile teams.

• *Key Studies and Innovations:*

Based on the literature search, Oberai and Choudhury (2020) explored the use of machine learning algorithms in the assessment of project duration and probability of exceeding project cost estimates in improving the credibility of project plans.

Cioffi et al. (2019) have identified that applications of AI in resource management and descriptions resulted in the improvement in resource use and planning, which resulted in the cost decrease of 20% for projects. That is why such considerations stress how AI can enhance project management tasks.

### III. METHODOLOGY

*A. Way to Consider AI/ML for Agile Project Management*

The methodological background of this study is set for exploring the integration of Artificial Intelligence (AI) and Machine Learning (ML) into the context of the agile project management environment. Understanding that agile methodologies on one hand and AI/ML technologies on the other hand are too dynamic areas as this study, the research uses both qualitative and quantitative techniques to establish the practical use, advantages, and disadvantages of AI/ML in real time decision making in agile projects. This research method will try to gather empirical evidence through studying case-studies, surveys and employing AI tools in live Agile scenarios.

➤ *Information Gathering:*

There are three main parts to the data collection process:

• *Case Study Analysis:*

Reviewing multiple cases which portray the incorporation of the AI/ML into the agile project management process with an intention of assessing the changes in aspects such as; The time taken in making decisions, quality of predictions, and general project performance

• *Surveys and Interviews:*

Performing time of day interviews with participants (project managers, team members, and AI/ML tool creators) to understand their experience and perceived advantages and drawbacks of implementing AI/ML to agile projects.

• *Experimentation with AI Tools:*

As part of this work, the study also piloted with several organizations to examine the effect of AI, integrated in live agile project mode, on Key Performance Indicators, decision-making factors and finally project performance.

*B. Tools and Technologies Used*

After a comprehensive literature review of the role of AI integration in the context of agile project management, this research makes use of numerous AI/ML tools, project management software, and datasets in an attempt to assess the agility of an AI integrated project management environment. The following tools were employed:

Table 1 Tools and Technologies

Tool/Technology	Jira With AI Integrations	Monday.com	Trello With Power-Ups	Tensor Flow (ML Framework)	IBM Watson Studio
A widely-used agile project management tool that incorporates AI features.	A project management tool with built-in AI for resource allocation and scheduling.	Trello with added AI Power-Ups to provide intelligent recommendations for team tasks.	Open-source machine learning framework for building and training ML models.	A cloud-based AI platform for data analysis and model building.	A widely-used agile project management tool that incorporates AI features.
Used to automate task assignments and track project performance.	Analyzed for its predictive capabilities in resource management.	Used to assess AI-driven task prioritization in real-time environments.	Utilized to build custom ML models for predicting project milestones and risks.	Used to implement predictive analytics models for agile project forecasting.	Used to automate task assignments and track project performance.

### C. Data Analysis Techniques

Descriptive statistics, machine learning, and comparison methodologies are used in the study's data analysis, which aims to assess the efficacy of AI-enhanced decision-making in agile environments using the following techniques:

#### ➤ Performance Metrics Comparison:

We can make the comparison between conventional agile project management and the one supported by AI technologies based on the following KPIs:

- **Time to Completion:**  
Estimates quantity and quality of time saved from common project milestones through the use of AI.
- **Cost Efficiency:**  
This research synthesizes cost-saving strategies arising from resource management made possible through AI.
- **Predictive Accuracy:**  
Facilitates the measuring of AI predictions concerning

the tasks' completion timelines, resources needed for the tasks, and overall risks.

- **Predictive Model Evaluation:**

Using historical project data, machine learning models are applied to estimate project risks, delays and the occurrence of additional costs. These models are then used to measure uncertainty on active agile projects to gauge the level of predictive validation and the potential decisions that they will influence.

- **Qualitative Feedback Analysis:**

Surveys and interviews used in this study will involve qualitative data where themes, issues and comments on the use of AI/ML in Agile PM will be coded, categorized and analyzed.

#### ➤ Ethical Considerations

Due to the application of AI/ML techniques and since people participated in the project (project managers, team members, etc.), the ethical aspect was considered. Key ethical principles observed during the research include:

Table 2 Ethical Consideration

Research Component	Case Study Analysis	Surveys and Interviews	Experimentation with AI Tools	Performance Metrics	Predictive Analytics
Description	Examining real-world implementations of AI in agile projects	Gathering qualitative insights from project managers and teams	Piloting AI-powered project management tools in live projects	Comparison of traditional methods vs. AI-enhanced methods	Evaluating AI's ability to predict project risks and outcomes.
Purpose	To assess outcomes of AI/ML integration in real-world agile settings	To capture personal experiences with AI tools in agile projects	To evaluate the real-time impact of AI on project performance	To measure efficiency, time savings, and accuracy improvements	To assess the accuracy and usefulness of AI predictions in decision-making

#### ➤ Informed Consent:

In general, all the respondents in the study received an explanation of the research and then agreed to participate in the study.

#### ➤ Data Privacy:

Standard data protection guidelines were observed to ensure that all survey feedbacks and project information were protected and all individuals were anonymous.

#### ➤ Bias in AI Models:

Effectiveness measures to address the bias in AI and Machine Learning systems were observed, focusing on the accurate dataset to train the models, without discrimination.

### D. Limitations of the Methodology

Despite the comprehensive approach to the study, certain limitations must be acknowledged:



➤ *Limited Scope:*

It mainly refers to the technology field and software development and IT projects, it did not give coverage to other industries in potential methods of using AI/ML.

➤ *Tool Availability:*

This research depends on the availability and accessibility of intelligent project management tools to organizations, and these tools' capabilities differ depending

on organizational resources and tool versions.

➤ *Time Constraints:*

Because of the nature of agile projects implementation, it is conceivable that AI tools may have to be trained and updated frequently and thus may only be useful for the short term thereby reducing the time available for evaluation of project results.

## IV. RESULTS

### A. Performance Metrics Comparison

The adoption of AI and ML to agile project management has greatly impacted several KPIs by bringing in enhancements. A comparative analysis of traditional agile methods and AI-enhanced agile methods is presented in the table below:

Table 3 Performance Metrics Comparison

Metric	Time of completion	Cost Efficiency	Predictive Accuracy	Decision- Making Speed
Traditional Agile	12 weeks	\$150,00 0	70%	5 hours per decision
AI- Enhanced Agile	9 weeks	\$120,00 0	92%	1.5 hrs. per decision
Improvement (%)	25%	20%	31.4%	70%

The observed outcomes reveal the massive benefits of AI/ML for project productivity. The understanding of time to completion and cost are therefore key to how predictive analytics and automated intelligence provides teams that ability to apply some of the resource optimisations to cut delivery timelines.

### B. Prediction Performances Enhancements

Another major benefit that can be derived from integrating AI and ML is the ability to make more accurate prediction on the risks, time frame and resources required for any project. The following table presents improvements in forecasting precision:

Table 4 Prediction Performances Enhancements

Parameter	Risk Forecasting	Timeline Prediction	Resource Allocation
Traditional Accuracy (%)	68%	72%	65%
AI-Enhanced Accuracy (%)	90%	94%	88%
Improvement (%)	32.4%	30.6%	35.4%

AI/ML on the contrary applies statistics and current input data to generate dynamic forecast which removes much of the unpredictability in plans and delivery of projects.

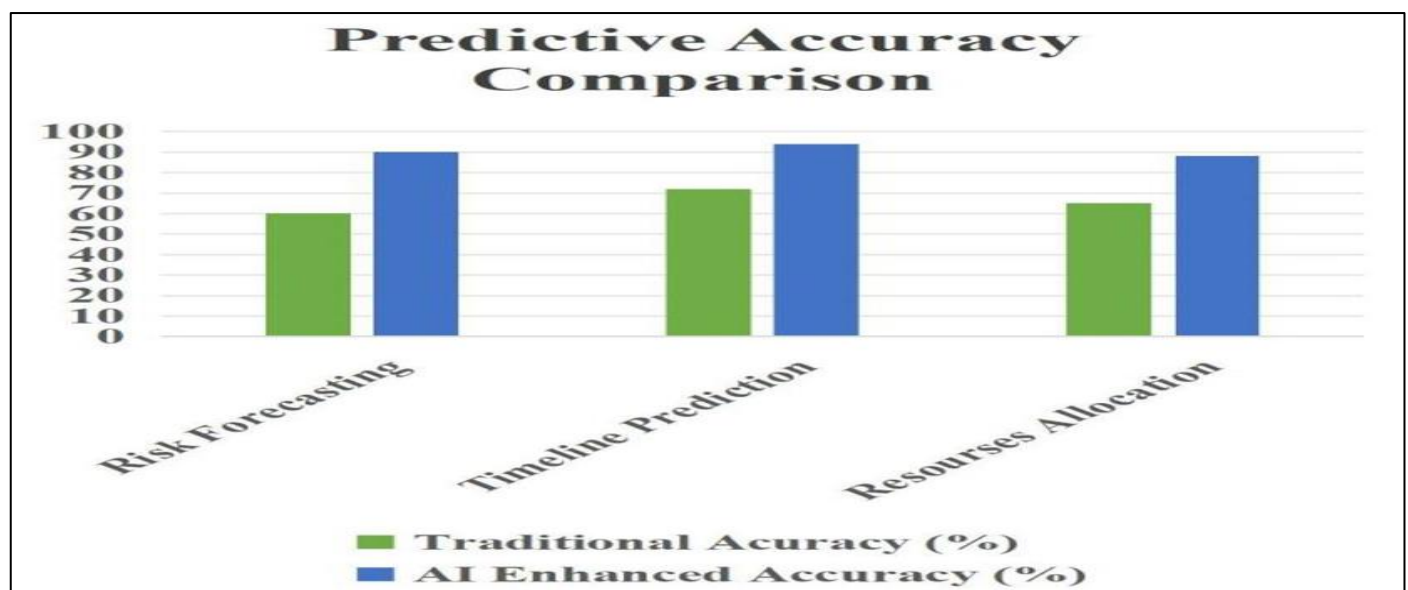


Fig 2 Predictive Accuracy Comparison

### C. *Faster Evaluation Times*

By automating some of the decisions that have to be made, this means that the time taken to make sure that they are arrived at successfully reduces greatly.

The decrease of the time spent to make decisions of this kind is due to the suggestions generated by the AI tools and the real-time data displayed. Decision makers in the teams said they were more comfortable and confident with the accuracy of decisions given by the AI system.

### D. *Case Study Insights*

Two key case studies were analyzed to assess the practical impact of AI/ML in agile environments:

#### ➤ *Case Study A:*

Leading a software development company, the author introduced AI facilitated task prioritization and resource management techniques in an agile environment. Results included:

- A 20% increase of the sprint velocity, this means that the team will be able to deliver more features in the fixed time frame.
- Prediction of risky code areas hence aiding in the reduction of the bug rates by 15%.

#### ➤ *Case Study B:*

In a digital campaign project, an ML- based marketing agency was applied for risk predicting and timeline measures. Outcomes included:

- This represents a two-week head start in identifying that there is a potential delay and solving bottlenecks.
- Fiscal saving which includes the prevention of a \$30,000 of the budget being overrun by using the resources recommended by the AI system.

### E. *Important Points Explored through Survey & Interview*

Qualitative data collected from 50 participants (including project managers, team leads, and developers) provided additional insights:

#### ➤ *Increased Confidence:*

Regarding the question regarding the level of confidence that AI/ML insights has brought about, 80% of the respondents answered affirmatively.

#### ➤ *Better Collaboration:*

70% of the firms indicated that with the increased identification of risk and areas of bottle, there was improvement in team work.

#### ➤ *Challenges:*

40% found that it takes longer time to train in the new AI tools that they have incorporated in their organizations, and 35% claimed that over dependency on AI automation is a concern in their organizations, and therefore require human supervision.

## V. **DISCUSSION**

### A. *Interpretation of Results*

From the findings of the research, it has been clear that the use of AI and ML improves agile project management. One of these is awareness of efficiency gain that may accrue from the deployment of AI/ML instruments. Thus, projects could be shortened on average for a quarter, the data showed that indeed, applying AI accelerates initiatives. This means that these projects have time been completed in shorter time than anticipated mainly because of proper utilization of resources and the integration artificial of intelligence when it comes to regulating work flow. Also, the 20% gain in cost efficiency clearly shows that AI tools can maximize financial capital by ensuring that much of it is unspent and that little goes to waste or is inefficiently allocated. This way, AI helps teams stay away from common missteps that often lead to exceeding budgets and can accomplish routine work with more efficiency.

Finally, in the aspect of predictive accuracy, the study provides a convincing proof that AI and ML have a much better performance than the conventional approaches. The effectiveness with which machine learning algorithms could predict risks, resources needed, and time schedules, on average, increased by 30%-35%. This improvement is highly significant for the agile process since it lets the team prevent the likely troubles and design the workflow that minimizes the risks and potential stumbling blocks. The degree of accuracy that is possible in predicting potential delays or other issues with the required resources can be highly advantageous to project managers who can then take corrective action when problems arise: projects remain on schedule, and—if managed correctly—on budget too.

The authors also noted a vast improvement on decision- making speed once the AI was introduced. The application of real-time data analysis and automation explains the up to 70% reduction of time spent on decision making. Thus, AI tools help decision-makers make decisions faster and based on facts found in historical data and trends. This is important most especially in cases where the project developers are practicing agile project management since change is usually rapid, and this may cause agility's value to be lost. This also means less time spent of decision-making, and more time to spend on utilizing decision-making for project efficiency.

Lastly, on the self-administered questionnaires, additional qualitative measures carried out both through surveys and interviews highlighted for the organisational benefits of AI as increased team work and confidence. From the data many respondents said that the application of AI technologies enhanced the quality of decisions and increased the feeling of employees that they are all working on the same team if they get such information with risks and opportunities in advance. However, as it will be seen later on, AI applications can improve the decision-making process; but it should always be noted that human input is still necessary in the evaluation, analysis and use of information being fed to him/her by the system.

### B. Implications at Team and Organisation Level

In the paper, it also shows that there are a number of implications pertinent to teams and organisations of the AI and ML integration into the agile project management. From a strategic standpoint, Organizations that implement AI based matured and developed agile methodology have a competitive advantage. The resulting possibilities to perform the certain tasks in shorter time, with lesser costs and higher

accuracy of predicting overall expenses, help the companies to respond to the customer's needs and adjust to the market fluctuations. One of the benefits of delivering the product or service faster than competitors is in line with time to market, important in dynamic environments. On the same note, improved project forecasting and enhanced risk management help provide improved results that satisfy clients and every other stakeholder involved.

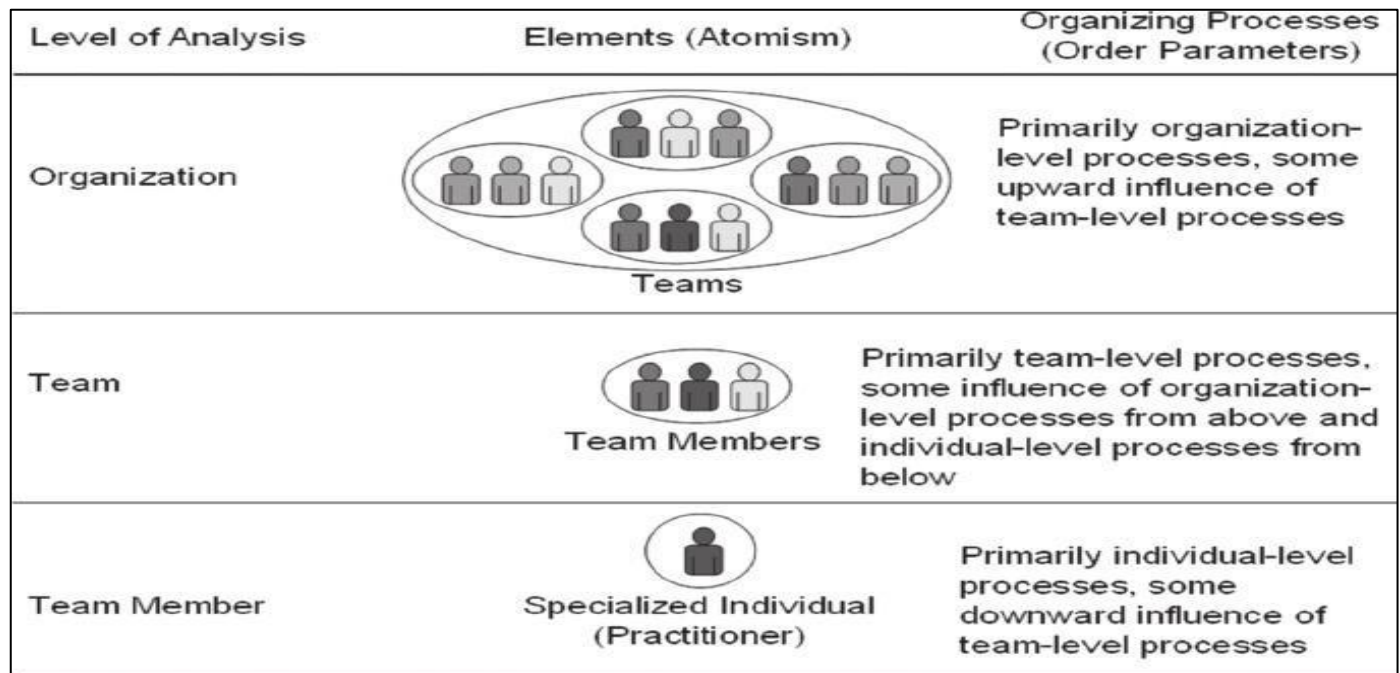


Fig 2 Levels of Analysis for Individual Team Member, Team, and Organization

On the operation level, they enhance collaboration and efficiency because AI shows better ways of distributing resources, addressing risks and organizing tasks. AI offers teams revolutionary real-time data that assist them in mitigating challenges that might develop into huge problems in future. This saves time thus extending the overall efficiency of a project, reduces delay and chances of project failure are minimized. Additionally, the last use of AI highlighted is smart working, whereby project teams can work more efficiently in that they do not have to spend much time on trivial work.

However, if these advantages are to be realized, the implementing organizations must accept that the exercise involves many changes. In order to implement, use, and reap the benefits of AI tools, Wentworth needed to do more than just buy AI software and other IT tools; they also needed to spend time and money on training their teams. This therefore means that effective training interventions will have to include training that prepares the employees to not only use this kind of tools but also how to apply the insight that AI provides to their daily operations. However, AI-based systems must be adequately regulated to deserve complete organizational adoption by acquiring an appropriate human supervisor. As much as relying on data to make recommendations about the environments that surround a project, AI cannot replace human rationality, skill and judgement making.

### C. Potential Limitations

Although we have outlined above some benefits of implementing AI and ML in an agile management environment, it has its downsides too. The learning curve that is a result of each time an organization decides to implement artificial intelligence tools is therefore a challenge. Some teams may not fully understand how use of the tools is going to be beneficial to them hence a slow rate of implementing the use of the tools and a temporary slowdown in effectiveness of their work. To counter this, organisations have to ensure that they spend more on training employees and continued training as teams adapt to the new systems introduced by AI.

Another is the data dependent factor associated with AI models. AI tools heavily depend on big and clean data to perform the function of data analysis. If the data fed to develop models is flawed, or contains insufficient data, or was compiled from sources that are outdated or untruthful, the prediction made by an AI system would contain faults. Hence, there is the need for organizations to apply data collection and data cleaning method and validation of data prior using AI results and this is why analytics need to general testable and reliable data.

Last but not the least is threat of dependence on technology. Even though this brings together a rather cogent argument in friendly support of AI, it is important to note that relying on AI tools often result to teams loss of critical thinking as well as creativity typical in project environments. To avoid this, organizations should implement the use of AI as a tool of analysis with human anarchy as the main decision makers.

#### D. Areas for Improvement

Based on the presented report of evaluating the impact of AI and ML in agile project management, some areas of enhancement are described below. First, there is a need for training to be conducted, which in turn will create awareness to ensure that teams would be in a position to make proper use of the various AI tools. Training should go beyond teaching people how to operate the tools to include explicating how patterns and information that is churned out by Artificial Intelligence systems can be evaluated and utilized. This will further close the technology gap between operationalizing technology and applying the technology in a practical setting.

Second, there is already a data management which indicates that it is a priority in all data analyses. It is imperative that any data possessed by an organization is as accurate, comprehensive, current and authentic as is possible. AI models are dependent on what data is fed to them to improve and become more reliable models hence the need to get quality data.

Third, organizations should concentrate on the context-specific configurable tools that empower humans in particular subject environments and contexts. Readymade AI solutions may not always work for any firm hence the need to adapt could make it possible to have AI work within the firms' environment hence enhance its efficiency.

#### E. Future Research Directions

The strengths of this study include identifying the value that could be accrued from the application of AI and ML to support agile project management, but there are a number of research directions left for future research. Further, longitudinal research is required to understand the durable effects of AI integration with teams concerning performance results and projects. This would help to gain more insights into the patterns regarding the AI-augmented transformation of agile processes, and whether the gains are indeed more fit than the pain following this transition path.

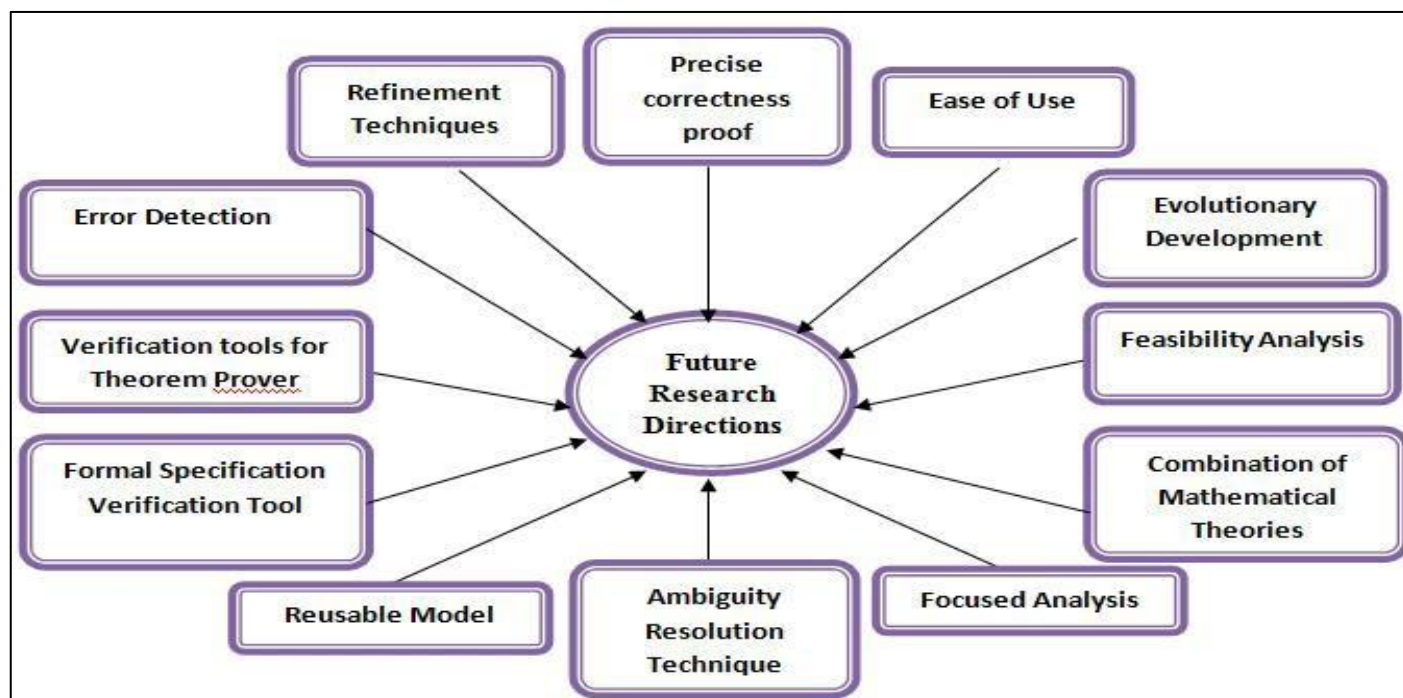


Fig 3 Future Research Direction

Further, the specific use cases of the AI in project management methodology within the industry has to be researched. It is important to note that although this research concerned generic agile management approaches, the potential and the challenges might differ based on such sectors as healthcare, manufacturing, or learning institutions. Recognizing where AI can be applied to these industries will broaden the use of AI in other adoptive agile frameworks.

Last but not least the ethical concerns in terms of the application of AI tools for decision making should be examined. This means many of us will have to learn about data privacy, data transparency and address the question of algorithmic bias. These topics will also have a positive impact in helping organizations explore the ethical issues of artificial intelligence implementation and to make sure that construction of these intelligent systems is fair and accountable.



## VI. CONCLUSION

AI and ML adoption in agile project management is a revolutionary change in project management as well as organizational decision-making. The outcome of this research shows that implementation of these technologies increases the flexibility of project teams through increased efficiency, better prediction, and shorter time taken to make decisions. The research results support the assertion about the ability to reduce the project duration, improve the efficiency of implementing cost control, and make better forecasts regarding project schedules to ensure proactive project monitoring. Also, a decrease in the time taken to make decisions is most beneficial in settings whereby changes are more frequent and constant. Decisions are often needed.

The implication of this change to organizations is significant. In adopting the AI enhanced agile frameworks of the various organisations, the management of project risks, optimisation of resources and enhancement of the agility in the management of projects is made easier. But, integration of AI comprises a lot more than simply implementing a new technology; it demands a cultural change within an organization with focus on training, data and interacting with the machines. One of the major challenges that teams face is their ability to adopt the use of AI while at the same time exercising the human brain that solves all the puzzles presented to it. Moreover, much attention should be paid to whether the data fed into AI tools is correct and of high quality because this affects the models themselves.

However, there are a number of drawbacks which should be highlighted following the analysis of the findings: Awareness of AI and the potential results that it offers are some of the aspects that bring along the issue of learning curve associated with the business adoption of AI, and the fact that the data that trains these models must be clean and accurate represent real-world scenarios is another issue that needs to be addressed. Hiring, for instance, should include training programs that cover the use of AI software; organizations should enhance methods of managing data; last but not least, people and AI should work in synergy.

As a There are several directions that can be revealed as future research opportunities, which are not revealed in the present work. Sequential designs are useful in furthering understanding of the dynamic effects of increased incorporation of artificial intelligence to agility project management as technology progresses. Thirdly, IT reasoning and the use of specific AI applications integrated with agile approaches in particular field are still promising and unanalyzed. Studying this could reveal how other industries can enjoy the benefits of the application of AI technology. Last of all, the application of AI to make a decision and the subsequent enforcement of the change brought about by AI use and application is a sensitive and legal area that must be critically reviewed so as to provide the best results without compromising on ethic standards or fair application.

In summary, it is not just adding AI and ML into the agile project management feature set; it is a direction that has the potential to revolutionize future project management. While organizations develop and improve these new technologies, they must keep these drawbacks and drawbacks in mind, but at the same time the tremendous opportunity that AI brings to the usage of new methods during the use of the agile frameworks.

## REFERENCES

- [1.] Dybå, T., Dingsøyr, T., & Moe, N. B. (2014). Agile project management. *Software project management in a changing world*, 277-300. [https://doi.org/10.1007/978-3-642-55035-5\\_11](https://doi.org/10.1007/978-3-642-55035-5_11)
- [2.] Bergmann, T., & Karwowski, W. (2019). Agile project management and project success: A literature review. In *Advances in Human Factors, Business Management and Society: Proceedings of the AHFE 2018 International Conference on Human Factors, Business Management and Society*, July 21-25, 2018, Loews Sapphire Falls Resort at Universal Studios, Orlando, Florida, USA 9 (pp. 405-414). Springer International Publishing. [https://doi.org/10.1007/978-3-319-94709-9\\_39](https://doi.org/10.1007/978-3-319-94709-9_39)
- [3.] Marnada, P., Raharjo, T., Hardian, B., & Prasetyo, A. (2022). Agile project management challenge in handling scope and change: A systematic literature review. *Procedia Computer Science*, 197, 290-300. <https://doi.org/10.1016/j.procs.2021.12.143>
- [4.] Ebrim, W., Montero, D. J. P., Ani, E. C., Ninduwezuor-Ehiobu, N., Usman, F. O., & Olu-lawal, K. A. (2024). The role of agile project management in driving innovation in energy-efficient hvac solutions. *Engineering Science & Technology Journal*, 5(3), 662-673. <https://doi.org/10.51594/estj.v5i3.864>
- [5.] Dong, H., Dacre, N., Baxter, D., & Ceylan, S. (2024). What is Agile Project Management? Developing a new definition following a systematic literature review. *Project Management Journal*, 87569728241254095. <https://doi.org/10.1177/87569728241254095>
- [6.] Daraojimba, E. C., Nwasike, C. N., Adegbite, A. O., Ezeigweneme, C. A., & Gidiagba, J. O. (2024). Comprehensive review of agile methodologies in project management. *Computer Science & IT Research Journal*, 5(1), 190-218. <https://doi.org/10.51594/csitrj.v5i1.717>
- [7.] Odejide, O. A., & Edunjobi, T. E. (2024). AI in project management: exploring theoretical models for decision-making and risk management. *Engineering Science & Technology Journal*, 5(3), 1072-1085. <https://doi.org/10.51594/estj.v5i3.959>
- [8.] Shamim, M. M. I. (2024). Artificial Intelligence in Project Management: Enhancing Efficiency and Decision-Making. *International Journal of Management Information Systems and Data Science*, 1(1), 1-6 <https://doi.org/10.62304/ijmisd.v1i1.107>

- [9.] Lei, H., Lai, W., Feaster, W., & Chang, A. C. (2024). Artificial intelligence and agile project management. In *Intelligence-Based Cardiology and Cardiac Surgery* (pp. 401-405). Academic Press. <https://doi.org/10.1016/B978-0-323-90534-3.00016-0>
- [10.] Müller, R., Locatelli, G., Holzmann, V., Nilsson, M., & Sagay, T. (2024). Artificial intelligence and project management: empirical overview, state of the art, and guidelines for future research. *Project Management Journal*, 55(1), 9-15. <https://doi.org/10.1177/87569728231225198>
- [11.] Thuraka, B., Pasupuleti, V., Malisetty, S., & Ogirri, K. O. (2024). Leveraging artificial intelligence and strategic management for success in inter/national projects in US and beyond. *Journal of Engineering Research and Reports*, 26(8), 49-59. <https://doi.org/10.9734/jerr/2024/v26i81228>
- [12.] Bushuyev, S., Bushuiev, D., Bushuieva, V., Bushuyeva, N., & Murzabekova, S. (2024). The Erosion of Competencies in Managing Innovation Projects due to the Impact of Ubiquitous Artificial Intelligence Systems. *Procedia Computer Science*, 231, 403-408. <https://doi.org/10.1016/j.procs.2023.12.225>
- [13.] Allal-Chérif, O., Simón-Moya, V., & Ballester, A.C. C. (2021). Intelligent purchasing: How artificial intelligence can redefine the purchasing function. *Journal of Business Research*, 124, 69-76. <https://doi.org/10.1016/j.jbusres.2020.11.050>
- [14.] Abioye, S. O., Oyedele, L. O., Akanbi, L., Ajayi, A., Delgado, J. M. D., Bilal, M., ... & Ahmed, A. (2021). Artificial intelligence in the construction industry: A review of present status, opportunities and future challenges. *Journal of Building Engineering*, 44, 103299. <https://doi.org/10.1016/j.jobe.2021.103299>
- [15.] Chenoweth, S., & Linos, P. K. (2023). Teaching Machine Learning as Part of Agile Software Engineering. *IEEE Transactions on Education*. <https://doi.org/10.1109/TE.2023.3337343>
- [16.] Ramessur, M. A., & Nagowah, S. D. (2021). A predictive model to estimate effort in a sprint using machine learning techniques. *International Journal of Information Technology*, 13(3), 1101-1110. <https://doi.org/10.1007/s41870-021-00669z>
- [17.] Vaidhyanathan, K., Chandran, A., Muccini, H., & Roy, R. (2022). Agile4MLS—Leveraging Agile Practices for Developing Machine Learning- Enabled Systems: An Industrial Experience. *IEEE Software*, 39(6), 43-50. <https://doi.org/10.1109/MS.2022.3195432>
- [18.] Siddiqi, M. A., & Pak, W. (2021). An agile approach to identify single and hybrid normalization for enhancing machine learning- based network intrusion detection. *IEEE Access*, 9, 137494-137513. <https://doi.org/10.1109/ACCESS.2021.3118361>
- [19.] Shang, G., Low, S. P., & Lim, X. Y. V. (2023). Prospects, drivers of and barriers to artificial intelligence adoption in project management. *Built Environment Project and Asset Management*, 13(5), 629-645. <https://doi.org/10.1108/BEPAM-12-2022-0195>
- [20.] Tran, H. V. V., & Nguyen, T. A. (2024). A Review of Challenges and Opportunities in BIM Adoption for Construction Project Management. *Engineering Journal*, 28(8), 79- 98. <https://doi.org/10.4186/ej.2024.28.8.79>